

CHAPTER I

INTRODUCTION

“Your body is a temple, but only if you treat it as one.”

- Astrid Alauda

Maintenance of good health is the means to living, existence, zest for life, feelings of being and happiness. Health not only means absence of sickness but presence of feelings and behaviours which constitutes different kinds of health. Achieving and maintaining health is an ongoing process, shaped by both the evolution of health care knowledge and practices as well as personal strategies and organized interventions for staying healthy known as lifestyle management.

The Times of India (2013) reported that, according to WHO health statistics 2012, the prevalence of hypertension in India was 23.1% in men and 22.6% in women in equal or more than 25 years age. The raised blood pressure was a high risk condition that caused approximately 51% of death from strokes and 45% from coronary artery disease. It was considered directly responsible for 7.5 million deaths in 2004, about 12.8 percent of the total of all global deaths. Dr Purshottam Lal (Padma Vibhushan), Interventional Cardiologist also added that about one billion people or 25 per cent of the world's adult population was hypertensive. About 7.5 million deaths every year and an untold number of cardiovascular events like strokes, heart attacks, heart failure , aneurysms and so on was also reported in the same article.

As per the **World Health Statistics 2012**, of the estimated 57 million global deaths in 2008, 36 million (63%) were due to non-communicable diseases (NCDs). The largest proportion of NCD deaths is caused by cardiovascular diseases (48%). In terms of attributed deaths, raised blood pressure is one of the leading behavioural and physiological risk factor to which 13% of global deaths are attributed. Hypertension is responsible for 57% of stroke deaths and 24% of CAD in India. Hypertension is reported to be the fourth contributor to premature death in developed countries and the seventh in developing countries.

High blood pressure, often called the silent killer, can go undetected and lead to very serious cardiovascular problems. In most cases, high blood pressure can be diagnosed and treated through common, natural solutions like weight loss and dietary restrictions like less salt intake & cholesterol diets or limiting alcoholic drinks. However, most high blood pressure is addressed through the patient medication prescription. Because of the seriousness of high blood pressure, it is always recommended to take and stick to the physician's advice.

Hypertension is a medical term used to describe increased pressure in the arterial system that transports blood from heart to rest of the body. Hypertension is defined as an average systolic blood pressure above 140 mm Hg, and a diastolic blood pressure above 90 mm Hg or both.

The **Seventh Report of the Joint National Committee** on Prevention, provides a classification of BP for adults 18 years and older. The classification is based on the average of two or more properly measured, seated, BP readings on each of two or more office visits.

Blood Pressure Classification	SBP mmHg	DBP mmHg
Normal	<120	and <80
Prehypertension	120-139	or 80-89
Stage 1 Hypertension	140-159	or 90-99
Stage 2 Hypertension	≥160	or ≥100

SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure

The first recording of human blood pressure came in **1847**, when German Physiologist **Carl Ludwig** inserted catheter in patient's artery and hooked the catheter to an invention called Kymograph. Kymograph is a device that monitors blood pressure by measuring the muscular contractions and physiological processes in the human body.

The first line of treatment for hypertension includes dietary changes, physical exercise, and weight loss. All these measures showed significant reduction in blood pressure in people with hypertension. Dietary change such as a low sodium diet is beneficial. Also, the DASH diet, a diet rich in nuts, whole grains, fruits, fish, poultry and vegetables lowers blood pressure. Some programs aimed to reduce psychological stress such as biofeedback or transcendental meditation may be reasonable add-ons to other treatment to reduce hypertension. Several exercise regimes including isometric resistance exercise, relaxation therapy, aerobic exercise, resistance exercise and device-guided breathing are found to be useful in reducing blood pressure.

Massage is the oldest form of healing and has been practiced across the world from India to Rome. **Dr.Fitzgerald** was the pioneer of reflexology treatment who specialized in the ear, nose and throat area. Reflexology is a sensational, dynamic yet simple approach to glowing health.

Reflexology Association of Canada (2011) defines reflexology as “a natural healing art based on the principle that there are reflexes in the feet, hands and ears and their referral areas within zone related areas, which correspond to every part, gland and organ of the body. Through application of pressure on these reflexes without the use of tools, the feet being the primary area of application, reflexology relieves tension, improves circulation and helps promote the natural function of the related areas of the body”

Foot reflexology has been practiced for thousands of years in places such as India, China and Egypt. In ancient times, people stimulate reflexes naturally by walking barefoot over rocks, stones and rough ground. In today's modern world, nature's way of maintaining a balanced and healthy equilibrium is lost. Reflexology helps to restore this balance and promote natural health and vitality.

Hypertension is one of the conditions purported to be improved by complementary therapies such as foot reflexology. Pressure techniques applied on the feet are believed to help unblock nerve supply and improve blood flow, which may help the body to function at its peak. It is claimed that reflexology relieves stress and tension by inducing relaxation. It brings about vasodilatation, reduced blood pressure, improved blood flow and provision of oxygen-rich nutrients to cells.

Lu WA, Chen GY, Kuo CD (2011) conducted a study to investigate the effect of foot reflexology to lower blood pressure in healthy subjects and patients with coronary artery disease. 17 people with angiographically patent coronary arteries and 20 patients with CAD recruited as the control and CAD groups, respectively. The systolic, diastolic, mean arterial, and pulse pressures were

significantly decreased after foot reflexology in both groups. In the CAD group, the percentage change in heart rate 30 and 60 minutes after foot reflexology was smaller than that in the control, and the percentage change in nVLFP 60 minutes after foot reflexology was smaller than that in the control. It was concluded that foot reflexology may be used as an efficient adjunct to the therapeutic regimen to increase the vagal modulation and decrease blood pressure in both healthy people and CAD patients.

Dr. Jesus Manzanares, M.D (2010) at the University Hospital and Sagrado Corazon Hospital in Barcelona, Spain studied the effectiveness of reflexology treatment on Hypertension in 54 patients with high blood pressure. He split them into two groups. One group had a general reflexology treatment done on a regular basis, while the second group had a specific targeted reflexology session. The target sessions focused on the heart, predominant frontal cortex, sympathetic thoracic ganglions, and kidneys. When the testing was complete the doctor found that 50% (27 people) were able to achieve lower blood pressure levels, even while reducing their regular medication.

NEED FOR THE STUDY

The **World Health Statistics(2010)** highlighted the increasing problems related to the non-communicable diseases such as blood pressure and diabetes. Worldwide, one in three adults has raised blood pressure that causes half of all deaths from stroke and heart disease.

The prevalence of hypertension in the late nineties and early twentieth century varied among different studies in India, ranging from 2 to 15% in Urban India and 2 to 8% in Rural India. The prevalence of hypertension in the last six

decades has increased from 2% to 25% among urban residents and from 2% to 15% among the rural residents in India. According to Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India, the overall prevalence of hypertension in India by 2020 will be 159.46/1000 population.

There are large regional differences in cardiovascular mortality in India among both men and women. The mortality is highest in South Indian states, Eastern and North-eastern states and Punjab in both men and women, while mortality is the lowest in the central Indian states of Rajasthan, Uttar Pradesh and Bihar.

The Hindu (2012) stated that a study published in the International Journal of Public Health, reported that the prevalence of hypertension was 21.4 per cent in about 10,500 people (aged 25-64) in 11 villages in the State. Prevalence was nearly the same in both sexes. Though earlier studies had documented 16 % prevalence in rural areas, studies carried out later in other States had reported 20 % prevalence. Prevalence of hypertension in urban areas was 22-30 %. Hypertension is one of the major risk factors for cardiovascular diseases, stroke and kidney failure. It was also found that, about 24.5 % of deaths in people aged 45-59 years in rural Tamil Nadu are caused by diseases of the circulatory system.

Park HS, et al., (2004) conducted a quasi-experimental study in Korea to evaluate the effects of foot reflexology on blood pressure in 34 essential hypertension patients. Among the subjects, 18 were assigned to experimental

group and 16 to control group. Foot reflexology was administered twice a week for 6 weeks and self-foot reflexology was practiced by samples twice a week for 4 weeks in the experimental group. There was a significant decrease in systolic blood pressure but no significant decrease in diastolic pressure in the experimental group compared to the control group. The results proved that foot reflexology was an effective nursing intervention to decrease systolic blood pressure.

Kaye AD, et al., (2008) conducted a study to describe the effects of deep tissue massage on systolic, diastolic, and mean arterial blood pressure. A total of 263 volunteers, (12% male & 88% females) with an average age group of 48.5 were participated in the study for 45 & 60 minutes. Blood pressure and heart rate were measured with an automatic blood pressure cuff. Results shown that there was a significant reduction of systolic pressure by 10.4 mm Hg ($p < 0.06$), diastolic pressure by 5.3 mm Hg ($p < 0.04$) and mean arterial pressure by 10.8 beats per minute ($p < 0.003$).

In a world of ever increasing technology and machine controlled medical interventions, people are beginning to need for a human touch which is more natural approach to health care that seeks to enhance life rather than dissect illness into more and more obscure diseases. There are a number of therapies which have a positive and holistic approach in a natural way. Complementary therapy is proved to be one of the effective treatments for most of the disease conditions. Complementary therapy such as yoga, acupuncture and homeopathy improve circulation, help boost immune system, eliminate toxins, reduce stress and tension, relieve pain, induce deep relaxation and restore balance to body systems.

Foot reflexology is a non-invasive, cost effective method used for the reduction of blood pressure. It is a readily available, painless procedure that can be applied to any person without consideration of time and place. This form of treatment demands no special devices or requirements.

After the personal experience in the clinical area and after reviewing the related literature, the investigator planned to conduct a study to evaluate the effectiveness of foot reflexology on blood pressure among patients with hypertension. Investigator was interested in the implication of foot reflexology among hypertensive patients to decrease the elevated blood pressure. Such intervention will help to reduce the high blood pressure in the selected patients.

Statement of the Problem

A Study to evaluate the effectiveness of foot reflexology on blood pressure among patients with hypertension at selected hospitals, Erode, Tamilnadu.

Objectives of the Study

- To assess the blood pressure of patients with hypertension .
- To evaluate the effectiveness of foot reflexology on blood pressure among patients with hypertension.
- To associate the pre and post-test blood pressure levels of patients with hypertension with their selected demographic variables in both groups.

Operational Definition

Effectiveness:

It refers to the reduction of high blood pressure after implementation of foot reflexology among patients with hypertension, as measured by using a calibrated sphygmomanometer, as determined by the difference in pre and post test scores and which is statistically significant.

Foot reflexology:

It refers to the therapeutic application of five steps of massage to both feet of patients with hypertension for a period of 10 minutes on each foot, daily for 5 consecutive days as a relaxation therapy.

Patients with Hypertension:

In this study, it refers to the patients, diagnosed as hypertension for a period of less than 10 years.

Hypotheses

- H₁:** There will be significant difference in the pre and post-test level of blood pressure of hypertensive patients before and after administering the foot reflexology.
- H₂:** There will be significant difference between the level of blood pressure among patients of experimental and control group.
- H₃:** There is a significant association between the level of blood pressure among patients and their selected demographic variables in both experimental and control group.

Assumption

Therapeutic application of foot reflexology will decrease blood pressure in patients with hypertension.

Delimitations

- The study is limited to a sample size of 60.
- Data collection procedure is limited to 4 weeks.

Projected Outcome

The present study was conducted with an aim to reduce high blood pressure using foot reflexology and associate the same with selected demographic variables among hypertensive patients. Foot reflexology will reduce the high blood pressure among hypertensive patients. The finding would help nurses to incorporate foot reflexology in provision of routine nursing care.

Conceptual Framework

The conceptual framework is the processor of theory. It provides a broad perspective for nursing practice, research and education. Conceptual framework plays several interrelated roles in the progress of science. Their overall purpose is to make scientific findings meaningful and generalizable.

Polit and Hungler (1995) state that, conceptual framework is interrelated concept or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme. It is a device that helps to stimulate research and extension of knowledge by providing both direction and impetus.

The conceptual framework for the present study was adopted from Wiedenbach's Helping Art of Clinical Nursing Theory (1970). This theory directs action towards the explicit goal.

It consists of three factors:

- ❖ Central purpose
- ❖ Prescription
- ❖ Realities

Central Purpose

Central purpose refers to what the nurse wants to accomplish. It is the overall goal towards which the nurse strives. It transcends the immediate intent of the task by specifically directing activities towards the objectives. In this study, central purpose refers to reduction of high blood pressure in patients with hypertension.

Prescription

Prescription refers to the plan of action for individual. It specifies the nature of the action that will fulfill the nurse's central purpose and the rationale for that action. In this study, prescription refers to assessing the demographic variables of patients with hypertension and their blood pressure before administration of foot reflexology.

Realities

Realities refer to the physical, physiological, emotional and spiritual factors that come into play in a situation involving actions. The five realities identified by Wiedenbach's are agent, recipient, goal, means and framework.

Agent

Agent is the researcher or designee who has the personal attributes, capacities, capabilities, commitment and competence to provide action.

Recipient

Recipient is one who receives an intervention or action.

Goal

Goal refers to researcher's desired outcome.

Mean

The activities and devices used by the researcher to achieve the goal.

Framework

It refers to the facilities in which area nursing is practiced.

The conceptualization of the nursing practice for the present study has 3 steps.

Step I: Identifying a need for help

Identifying need for help determines patient's need for help based on the existence of a need. In this study a need for help was identified by assessing the demographic variables of patients with hypertension and their blood pressure before administration of foot reflexology.

Step II: Ministering a needed help

Ministration refers to provision of needed help. It requires an identified need and a patient who wants help. After identifying the need for help, intervention has to be implemented.

In this study, ministering a needed help was provided as follows,

Agent : Investigator

Recipient : Patients with Hypertension who are admitted

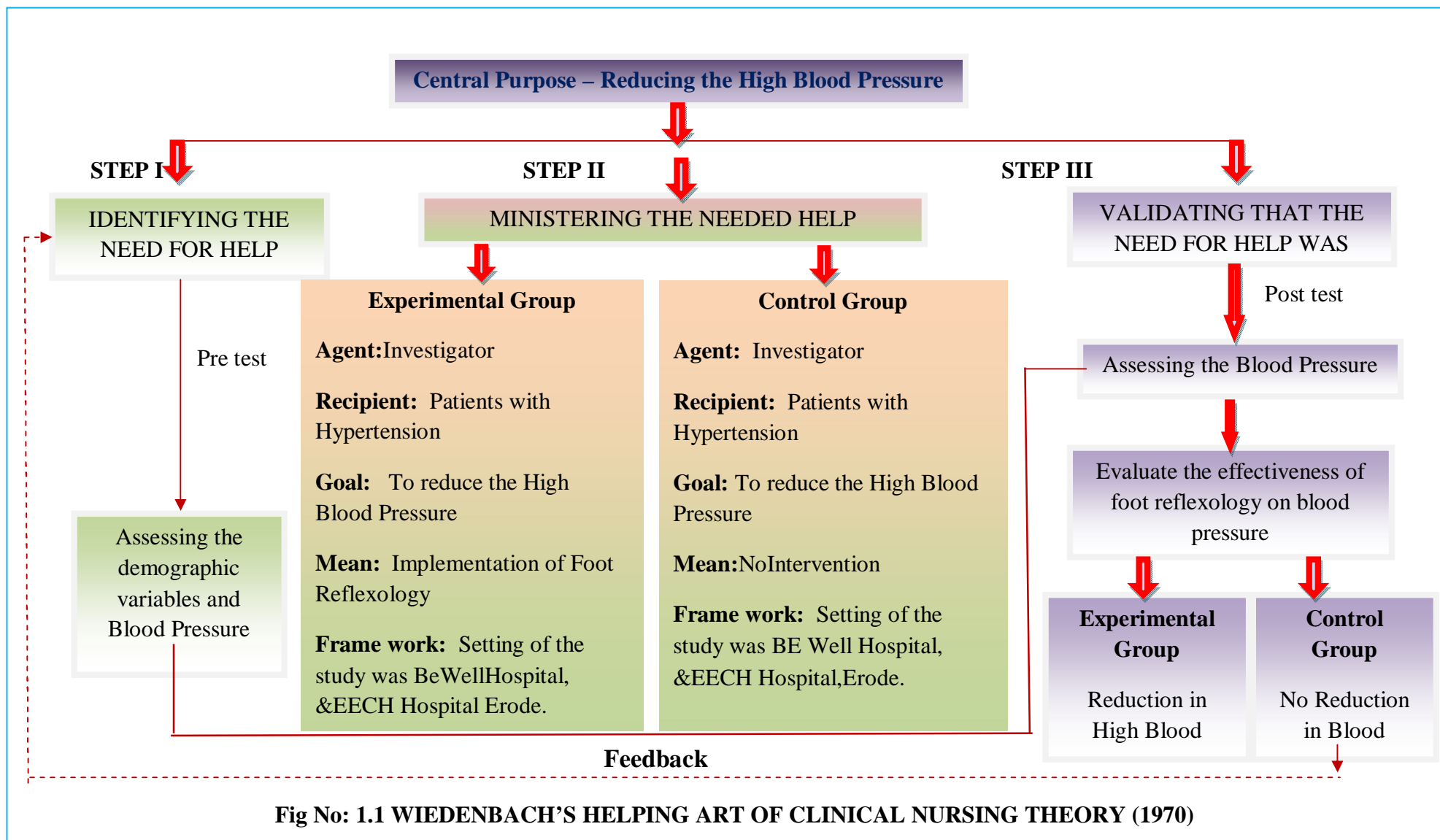
Goal : To reduce the high blood pressure

Mean : Foot Reflexology

Framework : Be Well Hospital And EECH Hospital, Erode.

Step III: Validating that a need for help was met

Validation refers to collection of evidence that shows a patient's need have been met and that his functional ability has been restored as a direct result of the nurse's actions. In this study, evaluation is established by determining the difference in pre and post-test assessment of blood pressure among patients with Hypertension.



CHAPTER II

REVIEW OF LITERATURE

According to **Polit and Hungler (2003)** literature review is a written summary of the state of existing knowledge on a research problem. The task of reviewing research literature involves the identification, selection of a critical analysis and written description of existing information on a topic.

The review of literature was organized under the following headings:

- Literature related to Hypertension
- Literature related to Foot reflexology
- Literature related to Foot reflexology and Hypertension

I. Literature Related to Hypertension:

Sujatha.T, Judie.A (2014) conducted a study to find the effectiveness of Yoga program (YP) on physio-psychological parameters among 238 hypertensive patients in community health centre, Kancheepuram. Blood pressure (BP), heart rate (HR), body mass index (BMI), anxiety and perceived stress were measured. State Trait Anxiety Inventory (STAI) and Perceived Stress Scale (PSS) were used. The participants were asked to practice yoga for 30– 45 minutes at home, after an intensive training for 12 weeks. Before intervention, 46% and 48% had higher level of stress in YP and control group respectively. After intervention, the YP group exhibited reduced BP, HR, BMI, anxiety, and perceived stress at $p < 0.001$ than the control group.

Kumutha et al., (2014) conducted an experimental study to evaluate the effectiveness of Progressive Muscle Relaxation (PMR) technique on stress and blood pressure among 30 elderly

with hypertension in rural health and training centre of SRMC & RI at Vayalanallur and Anaikattucherry. Stress level was assessed by Perceived Stress Scale (PSS). The study group (n=30) demonstrated PMR once a day for 20 minutes for 21 days. The survey (pre-test), demonstration of PMR and practice of PMR for 21 days was carried among the samples. The result highlighted PMR to be an effective method to decrease the stress and blood pressure among experimental group at $p < 0.001$.

Rosakutty George et al., (2012) conducted a pre-experimental study to find the effectiveness of a structured teaching programme on the knowledge level among forty hypertensive adults using non probability purposive sampling technique. Demographic proforma, knowledge checklist and 5 point rating scale on perceived barriers of lifestyle modification were used. The study revealed that the mean post-test knowledge scores of subjects were significantly higher than their mean pre-test knowledge scores. [t calculated value = 22.22 is greater than the t table value (39) = 1.68, $p < 0.05$].

Hayden et al., (2007) conducted an experimental study among 600 hypertension patients. Samples were randomized to 1 of 4 arms: (1) control group—a group of hypertensive patients who received usual care; (2) nurse-administered tailored behavioural intervention; (3) nurse-administered medication management according to a hypertension decision support system; (4) combination of behavioural and medication management. The primary outcome was reduction of BP to $\leq 140/90$ mm Hg (non-diabetic) and $\leq 130/80$ mm Hg (diabetics) patients. It was concluded that testing novel interventions in patients' homes might improve access, quality and outcomes.

L.Kannan, T.S.Satyamoorthy, (2002) conducted a cross sectional study to measure the prevalence of hypertension and identify the risk factors in a rural population in Mugalivakkam among 750 individuals using cluster-sampling method. Blood pressure was measured and

recorded. Out of 750 adults, 189 individuals were found to be suffering from hypertension including 93 known hypertensives. The overall prevalence rate of hypertension in both sexes was 25.2%. The prevalence rate was higher (27.4%) among females than males (22.6%). Increase in age, family size, occupation, alcohol, smoking, chewing tobacco, obesity, oral contraceptives use and diabetes mellitus were found to have association with hypertension.

II. Literature Related to Foot Reflexology

Preethy Mary et al., (2014) conducted a quasi-experimental study to assess effect of foot reflexology on psychological wellbeing of 30 elderly in selected old age home of Indore using random sampling technique. Modified Psychological General Wellbeing Index (Modified PGWBI) was used to assess the level of psychological wellbeing. After 15 days of intervention of foot reflexology findings showed that the mean score level of psychological wellbeing was 58.3 at pre-test which was increased to 60.27 at post-test which was statistically significant at $p < 0.001$. The result confirmed that foot reflexology was effective in enhancing the level of psychological wellbeing for elderly.

JipiVarghese et. al., (2014) conducted a randomized control trial to determine the effect of foot reflexology on intensity of pain and quality of sleep in 60 post caesarean mothers in Dakshina Kannada. The tools used were Pittsburgh Sleep Quality Index (PSQI) and Visual Analogue Scale (VAS). Experimental group received a single 15-minute foot reflexology session at the same time each evening for five consecutive days. After 5 days of treatment, results showed that the mean PSQI were found to be significantly lower in the intervention group ($p < 0.001$) than in the control group. The post-test mean score of pain in experimental group was significantly lower than of control group ($X = 4.75$, $X = 7.65$, $t = -10.627$, $p < .001$). Also, there

was a significant difference between groups in terms of the pain intensity and requesting for analgesic ($p < .001$).

Saeed Babajani et al., (2014) conducted a randomized clinical study to determine the effect of foot reflexology on the level of pain during chest tube removal after open heart surgery in Baqiyatallah Medical Sciences University among ninety samples. Pain level was measured through Numerical Rating Scale (NRS). In the experimental group, centre of the anterior one-third of the left foot and in the placebo-treated group, posterior one-third of the left foot was being massaged for ten minutes before chest tube removal. Pain was not increased due to the chest tube removal in the experimental group ($p=0.08$), while placebo-treated and control groups had significant increase of the pain ($p=0.001$ and $p=0.000$ respectively). It was concluded that foot reflexology was a useful nursing intervention in reducing pain in subjects during chest tube removal after open heart surgery.

Gholamhosyn Mahmoudirad et al., (2013) conducted a quasi-experimental study to evaluate the effect of foot reflexology among 70 patients undergoing coronary artery angiography in Iran using convenience sampling method. Tools used were a semi-structured questionnaire and Spielberg's anxiety questionnaire. Samples in experimental group received foot reflexology for 20 minutes. The results showed that there was significant difference in the mean anxiety score in intervention group before, immediately after and half an hour after intervention when compared with control group at $p < 0.001$.

Wyatt GA (2012) conducted a longitudinal study on health-related Quality-of-Life with Reflexology for 385 patients with advanced stage Breast Cancer using convenient sampling method. Women were randomized into three primary groups: reflexology ($n = 95$), lay foot manipulation (LFM) ($n = 95$), or conventional care ($n = 96$). Two preliminary reflexology ($n =$

51) and LFM (n = 48) test groups were used to establish the protocols. A longitudinal comparison revealed that significant improvements in physical functioning was observed for the reflexology group when compared to the control group ($p = 0.04$). Severity of dyspnea was reduced in the reflexology group when compared to the control group ($p < 0.01$) and the LFM group ($p=0.02$). No differences were found on breast cancer-specific HRQOL, depressive symptomatology, state anxiety, pain, and nausea.

Lee YM (2006) conducted an experimental study to identify the effects of a self-foot reflexology massage on depression, stress responses and functions of the immune system of 46 middle-aged women from Community Health Centre in Busan city, Korea. Subjects were trained in self-foot reflexology massage for 2 weeks, and then practiced for 6 weeks by self (2 days at the research centre, 5 days at home). The outcome variables were measured 4 times, (i.e) at baseline, pre training, after training, and after the intervention. The results showed that there was a statistically significant difference in perceived stress, depression, systolic blood pressure, natural-killer cells and IgG. However, there was no significant difference in diastolic blood pressure, pulse or serum cortisol.

Jin SJ, Kim YK (2005) conducted a quasi-experimental study to investigate the effects of foot reflexology massage on sleep and fatigue of 100 elderly women in University of Pusan. The foot reflexology massage was performed for 45 minutes every three days for experimental group. The results showed that the sleep and fatigue scores of the experimental group were significantly higher and lower than that of the control group respectively. It was observed that the sleep score was increased and that of fatigue was relieved gradually as the frequency of the foot reflexology massage increased for the experimental group.

MahboubbehValiani et al., (2005) conducted a quasi-experimental study to compare the effects of reflexology methods and ibuprofen administration on dysmenorrhea among 80 students using simple random sampling method in Isfahan University of Medical Sciences.

Visual Analog Scale (VAS) and Pain Rating Index (PRI) scale was used. In the reflexology group, ten days before the probable menstruation time, reflexology was done for 20 minutes on each foot during two consecutive days for two consecutive menses cycles. The Ibuprofen group received Ibuprofen (400 mg) once every eight hours for 3 days during 3 consecutive menses cycles. Independent and Paired t-test showed that there was a significant difference in the two groups between intensity and duration of menstrual pain using VAS and PRI in each of the 3 cycles between reflexology and Ibuprofen groups ($p < 0.05$).

Kang HS, et al., (2004) conducted a quasi-experimental study to identify the effects of self-foot reflexology on urinary incontinence symptoms, vaginal contraction and daily life discomfort among 39 middle-aged women with urinary incontinence. In the experimental group, self-foot reflexology was applied for 30 minutes, three times a week for 4 weeks. The findings indicated that self-foot reflexology was an effective method for reducing urinary incontinence symptoms and daily life discomfort and for increasing pressure of vaginal contraction of middle-aged women.

Stephenson NL et al., (2000) conducted a quasi-experimental study to test the effects of foot reflexology on anxiety and pain among patients with breast and lung cancer in the South-eastern United States. Foot reflexology was performed to both feet for 30 minutes and a control condition for each patient (with at least a two-day break). It was found that following the foot reflexology intervention, samples experienced a significant decrease in anxiety and pain.

III. Literature related to Foot Reflexology and Hypertension

Ali Mohammadpour, Atefeh Dehnoalian, Javad Mojtavavi (2013) conducted a quasi-experimental study to determine the effect of foot reflexology, on systolic and diastolic blood pressures among 68 stroke patients using random sampling method. Experiment group received foot reflexology for 30 minutes. **The results showed that the** blood pressure was significantly reduced among the experiment group after receiving the foot reflexology ($P < 0.05$). Hence it was

concluded that there was positive effects of foot reflexology on reducing blood pressure in patients with stroke and could be used as a supplement treatment.

Elisabeth Ruiz Padial et al., (2012) conducted a study to evaluate the cardiovascular effects of reflexology among forty-one participants using random sampling technique. Samples were grouped as: reflexology (n=15), non-professional foot massage (n=14), and a waiting time control group (n=12). The study was performed during three 40-min sessions separated by weekly intervals. The results of the study showed that the three manipulations produce similar increase in inter-beat interval, heart rate variability and baroreceptor reflex sensitivity.

Lee, Hyeon-Soon, Kim, Dong-Oak (2012) conducted aquasi-experimental study to examine the effects of Aroma foot reflexology and foot reflexology on blood pressure, pulse rate and blood lipid level among 71 elderly essential hypertensive patients, Korea. The experimental group I (24 persons) underwent aroma foot reflexology, experimental group II (27 persons) underwent foot reflexology and control group (20 persons) followed conventional treatment to measure the effects. The systolic blood pressure ($p < .05$), the diastolic blood pressure ($p < .05$), and the pulse rate ($p < .01$) of experimental group I and II after intervening respectively with aroma foot reflexology and foot reflexology for 6 weeks significantly decreased, than the control group, but the blood lipid level showed no significant difference among 3 groups ($p > .05$). It was concluded that both aroma foot reflexology and foot reflexology had positive effects to decrease the blood pressure and pulse rates among hypertensive patients.

Karima Elshamy, Eman Elsafety (2011) conducted aquasi-experimental study to investigate the effect of foot reflexology on blood pressure and quality of life among 80 hypertensive patients using random sampling technique. There was a statistically significant

reduction of both systolic and diastolic blood pressure in the experimental group at $p > 0.05$. There was no evidence for improvement in Quality of Life in either group.

PraneeJongsomjit (2005) conducted a quasi-experimental study to determine the effects of foot reflexology on physiological response, relaxation and satisfaction among 30 hypertensive patients using purposive sampling technique. True foot reflexology and mimicked foot reflexology were administered. The results showed that after receiving true foot reflexology, samples had a significant reduction in high blood pressure, pulse rate, respiratory rate and enhanced relaxation and satisfaction at $p = 0.001$.

Cho et al., (2004) conducted an experimental study to evaluate the effects of foot reflexology on blood pressure, serum lipids, fatigue and self-efficacy among thirty-four hypertensive patients. Foot reflexology was administered twice a week for 6 weeks to the participants in experimental group. There was a significant decrease in systolic and diastolic blood pressure and fatigue in the experimental group when compared to the control group. After the foot reflexology, triglyceride, total cholesterol, high density lipoprotein, low density lipoprotein levels and self-efficacy for the experimental group was not decreased significantly when compared to the control group.

CHAPTER III

RESEARCH METHODOLOGY

According to **Polit and Beck, (2004)**, methodology of research refers to investigation of way of obtaining, organizing and analyzing data. Methodological studies address the development, validation and evaluation of research tool and methods.

This chapter deals with description of the different steps undertaken by the investigator in the study. It includes the research design, setting, variables, population, sample size, sample technique, sample criteria, description of the tool, content validity, pilot study, ethical consideration, data collection procedure and plan for data analysis.

Research Approach

Research approach is an important element of the research design, which governs it. It involves the description of the plan to investigate the phenomenon under study in a structured method. The approach used in this study was quantitative evaluative approach.

Research Design

Denise.E.Polit, (2008) defines research design as the overall plan for addressing a research question including specification for enhancing the study's integrity.

Quasi Experimental pre-test post-test control group design was selected to evaluate the effectiveness of foot reflexology on blood pressure among patients with hypertension.

E	O₁	X	O₂
C	O₁	-	O₂

E= Experimental group

C= Control group

X= Foot reflexology

O₁ = Pre test

O₂ = Post test

Population

Polit and Hungler, (1999) defined population as the entire aggregation of cases that meet a designed set of criteria.

The population of the present study were patients with hypertension who are admitted in hospitals.

Setting of the Study

Polit and Hungler, (1999) states that setting is the physical location and condition in which data collection takes place. Setting of the study is the essential constituent to ensure effective planning to conduct a research study. This study was conducted in the in-patient department of Be Well Hospital & EECH hospital, Erode. Both hospitals are 100-bedded multi-speciality hospital with 24 hours emergency service and diagnostic facilities. It is situated in the heart of the Erode city. The hospital comprises of 3 floors with all facilities, out-patient department and in-patient department, cardiac units, intensive care unit and operation theatre facilities. The hospital receives an average of 10 to 15 patients every day. The average number of hypertension patients in the ward is about 7 patients per day. It provides tertiary health care services to public, who come from various parts of Tamilnadu.

Sampling

Sample:

Polit and Hungler, (1999) defined sample is the subset of population selected to participate in a research study.

The sample of the present study was patients with hypertension admitted in the in-patient ward in Be Well Hospital & EECH Hospital, Erode.

Sample Size:

The sample comprised of 60 patients with hypertension, comprising of 30 samples in experimental group and 30 in control group.

Sampling Technique:

Polit and Hungler, 1999 defined sampling technique is the process of selecting a portion of the population to represent the entire population.

Non-probability purposive sampling was selected for the present study.

Sampling Criteria:

The study samples were selected using the following criteria.

Inclusion criteria:

Patients with Hypertension:

- The age group between 30 to 70 years
- Diagnosed with hypertension for less than 10 years
- Who are willing to participate in the study
- Who are on oral antihypertensive drugs
- Who can understand English or Tamil

Exclusion criteria:

Patients with Hypertension:

- Who are following any other relaxation techniques
- Who are psychologically unstable
- Who are having foot ulcers
- Who have neuropathies

Variables

Variables are qualities, properties or characteristics of person, things, or situations that change or vary. Variables are classified based on their nature, actions, and effects on the variables.

Independent variable: Foot reflexology.

Dependent variable: Blood pressure.

Attribute variables

Attribute variables are the characteristics of the subjects that are collected to describe the sample, which includes age, gender, education, marital status, employment status and family income.

Development of the tool

The investigator prepared and developed a structured interview schedule as a tool for the present study after exploring the various sources of information. The proforma to assess the demographic data and the clinical details of hypertension were developed by the investigator. Blood pressure chart was used to record the blood pressure of the subjects.

Description of the tool

The tool consists of three sections:

Section A : Demographic variables of the samples.

Section B : Clinical details of the Patients with hypertension.

Section C: Blood pressure chart measuring blood pressure before and after foot reflexology.

Section A

It consists of demographic variables such as Age, Sex, Marital status, Education, Occupation, Income, Type of family, Living locality, Diet pattern, Habit, Physical activity and Practice of regular exercise.

Section B

It consists of clinical details of Patients with hypertension, such as duration of illness, Family history, Regularity of Medication, Co-morbid illness and Duration of medication.

Section C

It consists of observation chart for blood pressure for the samples tool used to measure the blood pressure.

Table 3.1

BLOOD PRESSURE CHART

OBSERVATION	DAY 1		DAY 2		DAY 3		DAY 4		DAY 5	
DATE										
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Systolic blood pressure (in mm Hg)										
Diastolic blood pressure (in mm Hg)										

Content Validity

Polit and Hungler, 1999 defined content validity as the degree of which the item in an instrument adequately represents the universe of the content.

The tool developed by the investigator was sent along with the request for validation to a medical expert and five experts in the field of Medical Surgical Nursing. The experts were requested to check for the relevance, sequence and adequacy of language of the tool. The expert's suggestions were incorporated in the tool. Then the tool was finalized and used for the main study.

Reliability of the instrument

According to **Polit and Hungler, 1999** reliability refers to the degree of consistency or dependability with which an instrument measures the attribute it is designed to measure. Reliability of the tool was established by inter rater method and the obtained 'r' value is 0.88. Hence the tool was found reliable and considered for proceeding.

Pilot study

According to **Polit and Hungler, (1999)** pilot study refers to a small scale version or trial run done in preparation for a major study. Pilot study tests the reliability, practicability, appropriateness and feasibility of the study and the tool.

Pilot study was done among twelve hypertensive patients obtaining permission from the concerned authority. The setting was in-patient wards of Be Well Hospital & EECH Hospital, Erode. Data was obtained from all the samples and pre-test was conducted. Foot Reflexology was done for 10 minutes on both feet, once daily for 5 consecutive days for all the samples in the experimental group. Post test was conducted 30 min after pre-test in all the samples. Pilot study confirmed the adequacy of the tool and technique. Hence there were no modifications required in the main study.

Ethical consideration

Due permission was sought from the hospital authority including ethical committee clearance report. Informed verbal consent was obtained from all the samples. Assurance was given for the confidentiality of the information given by the samples. Routine care was not altered or withheld. Samples were allowed to withdraw from the study at any time.

Data collection procedure

Data was collected during the 4 weeks. The hypertensive patients who fulfilled the inclusion criteria were selected by purposive sampling technique. The purpose of the study was explained to the samples after self introduction of the researcher. Informed verbal consent was obtained from the samples. The demographic data was collected through structured interview schedule in Tamil. Blood Pressure was measured and recorded in the observation chart for 5 consecutive days. Routine care was provided to all the samples included in this study. Foot

reflexology was implemented. Post-test blood pressure was taken for all the samples after 30 min duration of the pre-test. Ethical aspects were considered throughout the study.

Plan for data analysis

The data were edited, coded and entered in the master sheet. The data were analyzed using descriptive and inferential statistics.

The data were analyzed as follows:

- To assess the blood pressure of patients with hypertension before foot reflexology, mean, standard deviation and mean percentage were used.
- To assess the effectiveness of foot reflexology on blood pressure among patients with hypertension after foot reflexology paired 't' test was used.
- To find the association between the blood pressure scores among samples with their selected demographic variables Chi-square was used.

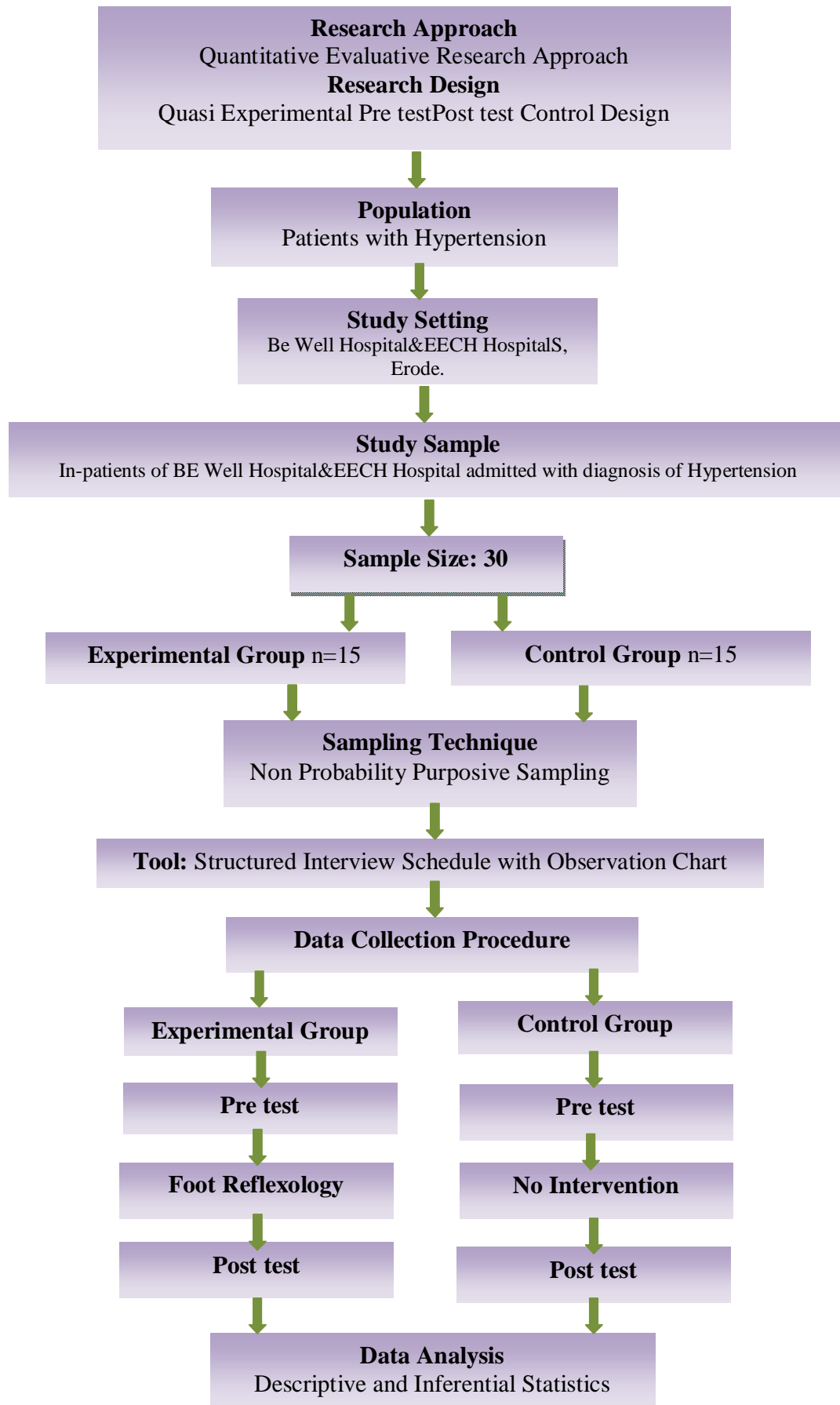


Figure 3.1 Schematic Representation of Research Methodology

CHAPTER - IV

DATA ANALYSIS AND INTERPRETATION

This chapter presents the analysis and interpretation of the data collected to determine the impact of foot reflexology on blood pressure among patients with hypertension at selected hospital, Erode.

The analysis of data involves the translation of the information collected during the course of the research project into interpretable, convenient and descriptive terms and to draw inferences from them using statistical methods. The purpose of analysis is to summarize, compare and test the proposed relationships and infer findings. The collected data was tabulated and analyzed using descriptive and inferential statistical in order to meet the objectives of the study, and to test the hypotheses.

The data collected were interpreted under the following sections

Section – I

Distribution of socio demographic variables and clinical variables among patients with hypertension.

Section - II

Description of level of blood pressure among patients with hypertension

Section - III

Effectiveness of foot reflexology on pretest and post test blood pressure level score among patients with hypertension.

Section - IV

Comparison of post test mean blood pressure level score among patients with hypertension in experimental and control group.

Section - V

Association between the level of blood pressure among patients with hypertension with their selected socio demographic variables and clinical variables.

SECTION - I

Distribution of socio demographic variables and clinical variables among patients with hypertension

Table – 1: Frequency and percentage distribution of socio demographic variable among patients with hypertension

n=30

Demographic variables		Experimental group		Control group	
		f	%	f	%
Age	31 - 40 years	2	6.7	7	23.3
	41 - 50 years	9	30.0	12	40.0
	51 - 60 years	10	33.3	8	26.7
	61 - 70 years	9	30.0	3	10.0
Sex	Male	18	60.	17	56.7
	Female	12	40.	13	43.3
Educational status	No formal education	11	36.7	12	40.0
	Up to middle school level	7	23.3	9	30.0
	Higher secondary level	9	30.0	7	23.3
	Diploma/Degree	3	10.0	2	6.7
Occupational status	Unemployed	3	10.0	8	26.7

	Gov. employee	9	30.0	9	30.0
	Private	15	50.0	10	33.3
	Self employee	3	10.0	3	10.0
Family income	Rs. < 5000	10	33.3	6	20.0
	Rs. 5001 - 7,500	3	10.0	7	23.3
	Rs. 7,501- 10,000	6	20.0	6	20.0
	Rs. > 10,000	11	36.7	11	36.7
Marital status	Married	24	80.0	24	80.0
	Unmarried	4	13.3	4	13.4
	Spouse not alive	2	6.7	1	3.3
	Divorced	0	0.0	1	3.3
Type of family	Nuclear family	22	73.3	19	63.4
	Joint family	5	16.7	7	23.3
	Extended family	1	3.3	4	13.3
	Separated family	2	6.7	0	0.0
Food habit	Vegetarian	7	23.3	6	20.0
	Non-vegetarian	23	76.7	24	80.0
Locality	Rural	22	73.3	20	66.7
	Urban	8	26.7	10	33.3
Habits	Smoking	10	33.3	11	36.7

	Alcohol	11	36.7	9	30.0
	Chewing tobacco	9	30.0	7	23.3
	Others	0	0	3	10.0

From this table, it is clearly understood that with regard to the age in experimental group about 6.7%(2) of them falls within the age group of 31-40, about 30%(9) of them falls between the age group of 41 –50 , about 33.3%(10) of them falls between the age group of 51-60 and 30%(9) of them falls between the age group of 61 - 70. In control group, about 23.3%(7) of them falls between the age group of 31-40 years, 40% (12) of them falls between the age group of 41 –50 years, 26.7%(8) of them falls between the age group of 51-60 years and 10%(3) of them falls between 61- 70.

Similarly, with regard to gender in experimental group about 60%(18) of them are male while 40%(12) of them are female. In control group about 56.7%(17) of them are male while 43.3%(13) of them are female.

With regard to educational status about 36.7%(11) of them are not having formal education, 23.3%(7) of them are having up to middle school level education, 30.3%(9) of them are having higher secondary level education, 10%(3) of them are having diploma/degree level education in experimental group. While in control group, about 40%(12) of them are not having formal education, 30%(9) of them are having up to middle school level education, 23.3%(7) of them are having higher secondary level education, 6.7%(2) of them are having diploma/degree level education.

The table shows that the occupational status in experimental group about 10%(3) are unemployed, 30%(9), are government employee, 50%(15) are private and 10%(3) are self employee. In control group the occupational status about 26.7%(8) are unemployed, 30%(9), are government employee, 33.3%(10) are private and 10%(3) are self employee.

The table also shows that the family income in experimental group about 33.3%(10) are falling under the income of below 5000, about 10%(3) of them are falling between the income of 5001-7,500,

20%(6) between the income of 7,501-10,000 and about 36.7%(11) between the income of above 10,000. In control group, about 20%(6) of them falls below the income of 5000, about 23.3%(7) of them falls between the income of 5,001-7,500, about 20%(6) of them falls between 7,501-10,000 and Only 36.7%(11) of them all above the income of 10,000.

This distribution of marital status in experimental group consists of about 80%(24) are married, 13.4%(4) are unmarried, 6.7%(2) are spouse not alive and nobody got divorce. In control group about 80%(24) are married, 13.4%(4) are unmarried, 3.3%(1) are spouse not alive and 3.3%(1) got divorce.

In experimental group, about 73.3%(22) of them belong to nuclear family, 16.7%(5) of them belong to joint family, 3.3%(1) belongs to extended family and 6.7%(2) belongs to separated family. In control group, about 63.4%(19) of them belong to nuclear family, 23.3%(7) of them belong to joint family, 13.3%(4) belongs to extended family and none of them belongs to separated family.

In experimental group about 23.3%(7) of them are vegetarian and about 76.7%(24) of them belong to non-vegetarian. In control group about 20%(6) of them are vegetarian and about 33.3%(10) of them belong to non-vegetarian.

In experimental group about 73.3%(22) of them are in rural and about 26.7%(8) of them belong to urban. In control group about 66.7%(20) of them are rural and about 33.3%(10) of them are belong to urban area.

In experimental group about 33.3%(10) of them have the habit of smoking, 36.7%(11) of them were alcoholic and 30.0%(9) of them have the habit of tobacco chewing. In control group about 36.7%(11) of them have the habit of smoking, 30.0%(9) of them were alcoholic and 23.3%(7) of them have the habit of tobacco chewing and 10.0%(3) of them have the habit of others.

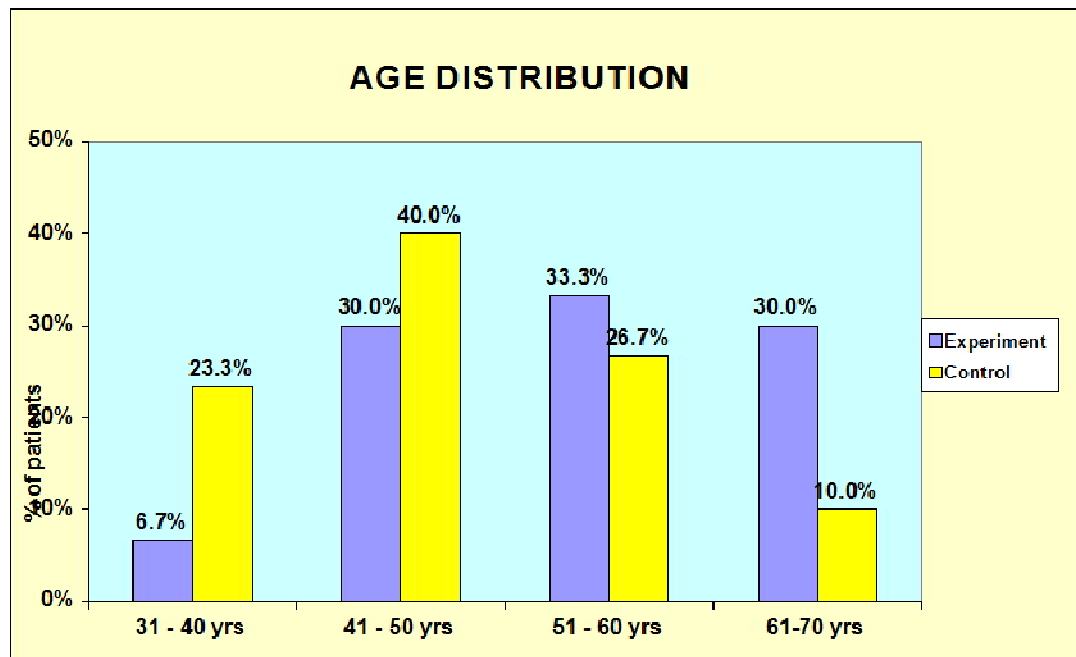


Fig.2. Multiple bar diagram shows percentage distribution of patients with hypertension according to their age.

The above figure shows, with regard to the age in experimental group about 6.7%(2) of them falls within the age group of 31-40, about 30%(9) of them falls between the age group of 41 –50 , about 33.3%(10) of them falls between the age group of 51-60 and 30%(9) of them falls between the age group of 61 - 70. In control group, about 23.3%(7) of them falls between the age group of 31-40 years, 40% (12) of them falls between the age group of 41 –50 years, 26.7%(8) of them falls between the age group of 51-60 years and 10%(3) of them falls between 61- 70.

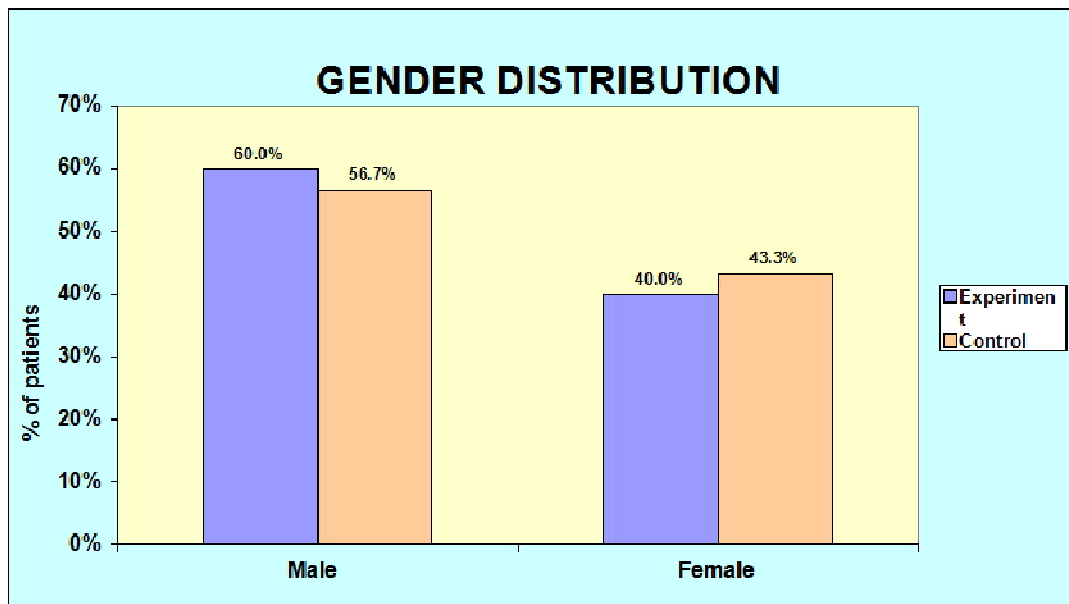


Fig.3. Multiple bar diagram shows percentage distribution of patients with hypertension according to their gender

The above figure shows, with regard to gender in experimental group about 60%(18) of them were male while 40%(12) of them were female. In control group about 56.7%(17) of them were male while 43.3%(13) of them were female.

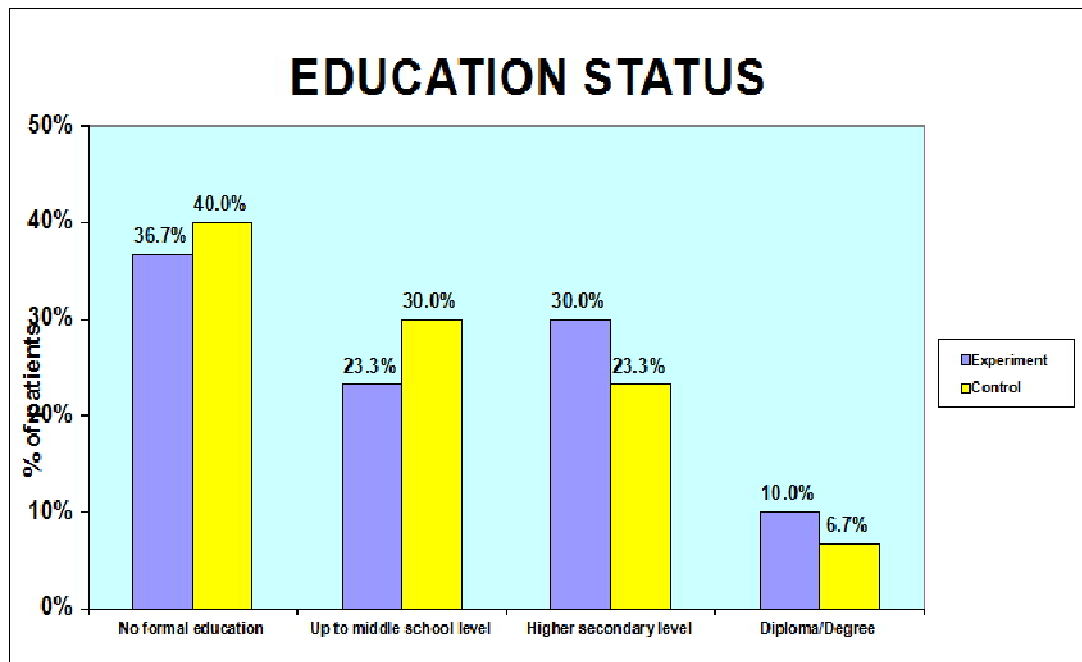


Fig. 4 Multiple bar diagram shows percentage distribution of patients with hypertension according to their educational status

The above figure shows with regard to educational status maximum were about 36.7%(11) of them were not having formal education, 10%(3) minority were having diploma/degree level education in experimental group. While in control group, maximum about 40%(12) of them were not having formal education, 6.7%(2) of them were having diploma/degree level education were in minority.

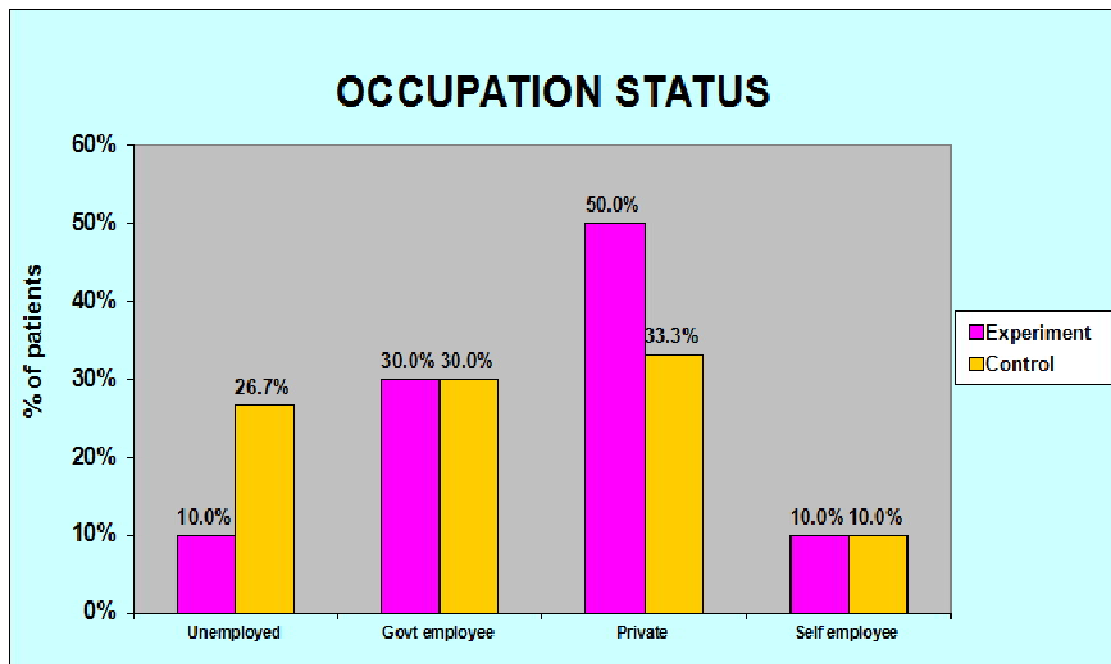


Fig. 5 Multiple bar diagram shows percentage distribution of patients with hypertension according to their occupational status

The above figure shows that the occupational status in experimental group majority of them were 50%(15) private and 10%(3) minority were un employee and self employee. In control group the occupational status about 33.3%(10) majority were private and 10%(3) minority were self employee.

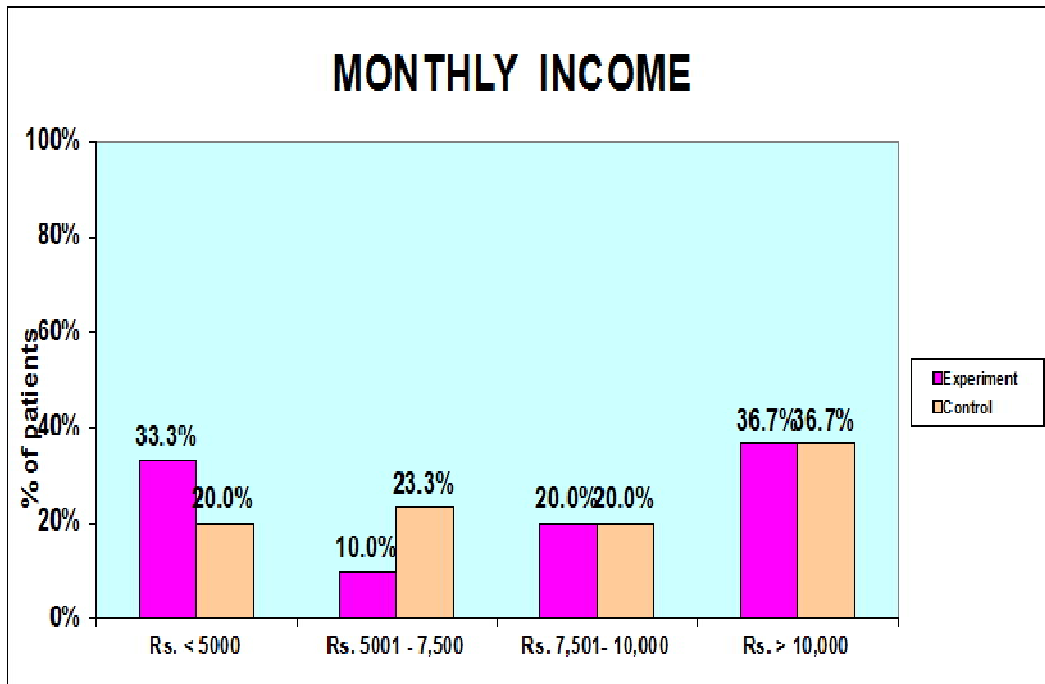


Fig. 6 Multiple bar diagram shows percentage distribution of patients with hypertension according to their monthly income

The above figure shows that the family income in experimental group about 33.3%(10) are falling under the income of below 5000, about 10%(3) of them are falling between the income of 5001-7,500, 20%(6) between the income of 7,501-10,000 and about 36.7%(11) between the income of above 10,000. In control group, about 20%(6) of them falls below the income of 5000, about 23.3%(7) of them falls between the income of 5,001-7,500, about 20%(6) of them falls between 7,501-10,000 and Only 36.7%(11) of them all above the income of 10,000.

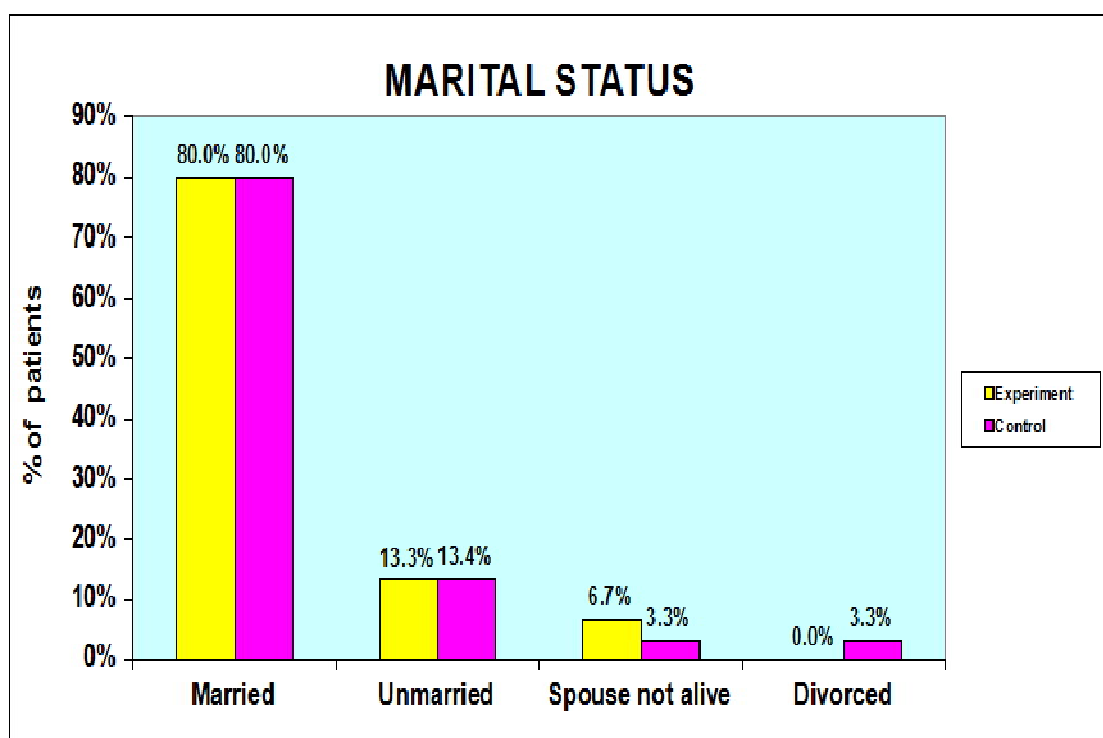


Fig. 7 Multiple bar diagram shows percentage distribution of patients with hypertension according to their marital status

This distribution of marital status in experimental group consists of about 80%(24) were married, 6.7%(2) were spouse not alive. In control group about 80%(24) were married, 3.3%(1) were spouse not alive and 3.3%(1) got divorce.

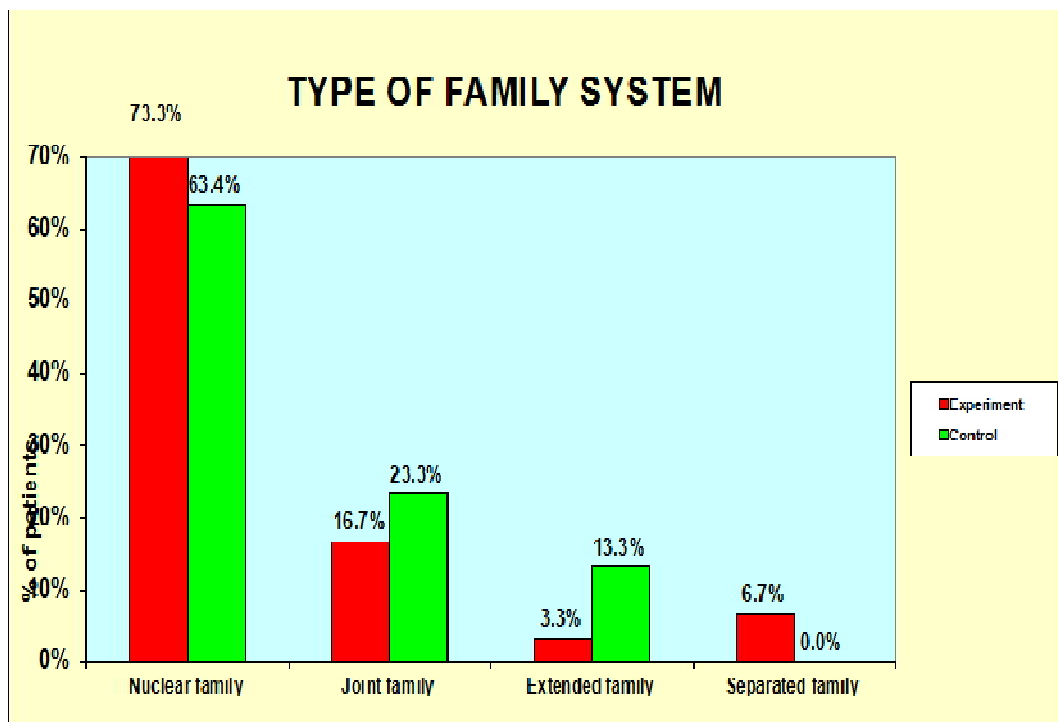


Fig. 8 Multiple bar diagram shows percentage distribution of patients with hypertension according to their type of family.

In experimental group, about 73.3%(22) of them belong to nuclear family, 3.3%(1) belongs to extended family. In control group, about 63.4%(19) of them belong to nuclear family, 13.3%(4) belongs to extended family.

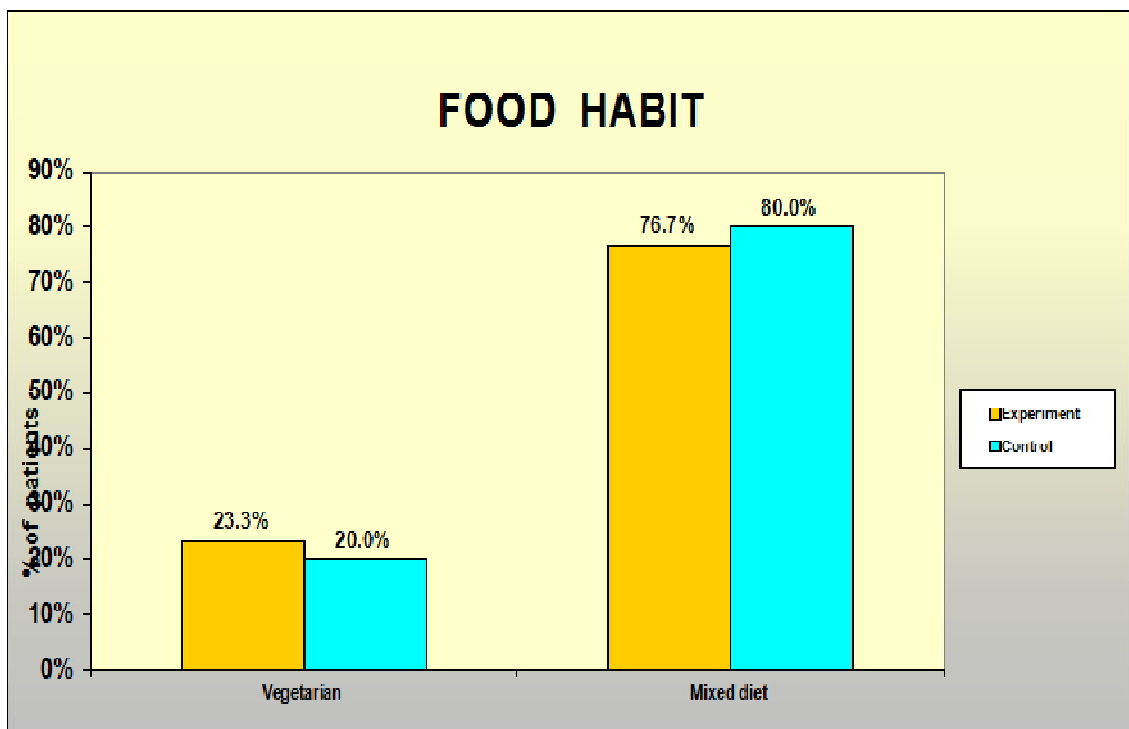


Fig. 9. Multiple bar diagram shows percentage distribution of patients with hypertension according to their food habit

In experimental group about 23.3%(7) of them were vegetarian and about 76.7%(24) of them belong to mixed diet. In control group about 20%(6) of them were vegetarian and about 33.3%(10) of them belong to mixed diet.

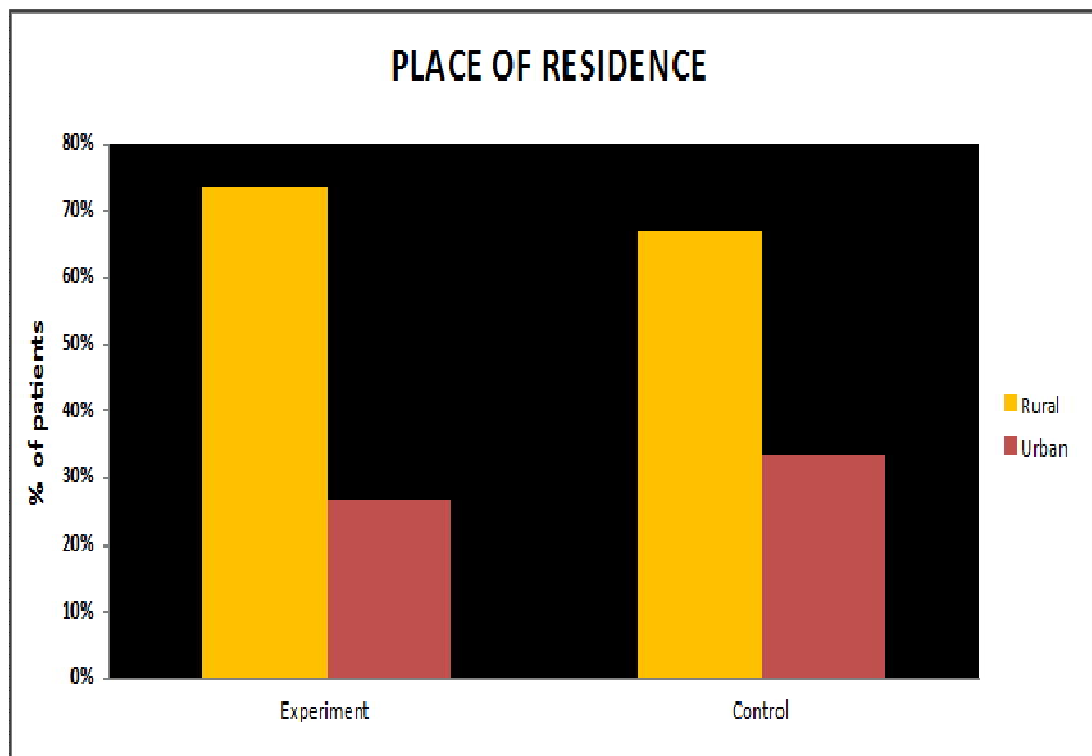


Fig. 10 Multiple bar diagram shows percentage distribution of patients with hypertension according to their place of residence.

In experimental group about 73.3%(22) of them were in rural and about 26.7%(8) of them belong to urban. In control group about 66.7%(20) of them were rural and about 33.3%(10) of them were belong to urban area.

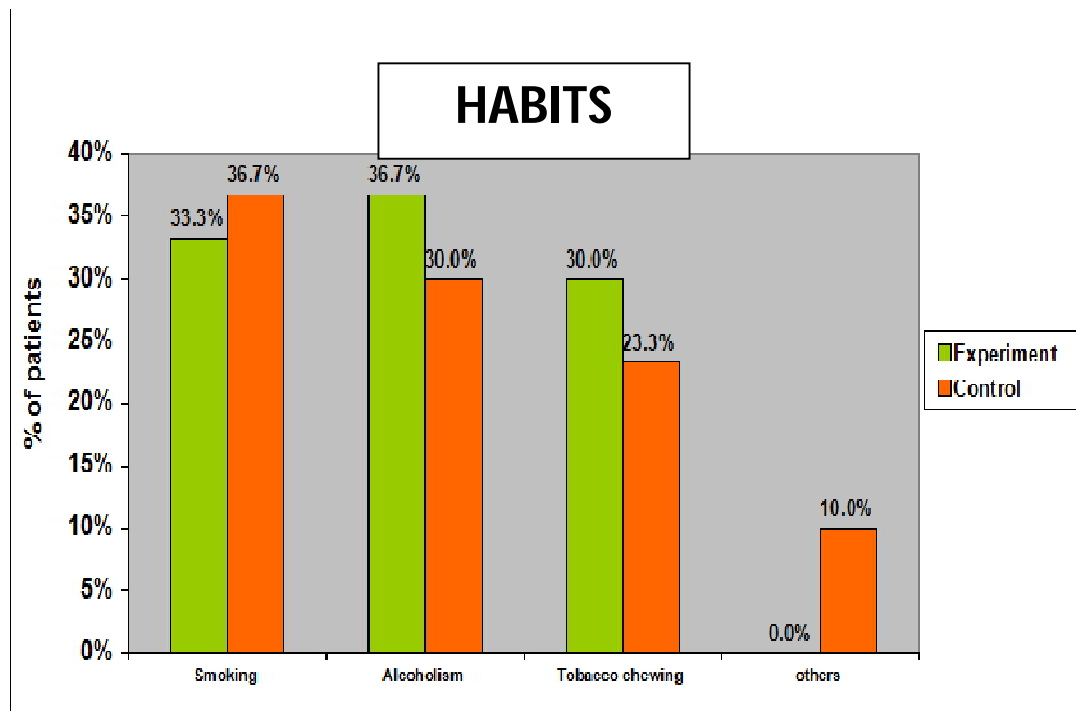


Fig. 11 Multiple bar diagram shows percentage distribution of patients with hypertension according to their place of residence.

In experimental group about 33.3%(10) of them have the habit of smoking, 36.7%(11) of them were alcoholic and 30.0%(9) of them have the habit of tobacco chewing. In control group about 36.7%(11) of them have the habit of smoking, 30.0%(9) of them were alcoholic and 23.3%(7) of them have the habit of tobacco chewing and 10.0%(3) of them have the habit of others.

Table – 2: Frequency and percentage distribution of clinical variables among patients with hypertension.

Clinical variables		Group			
		Experiment		Control	
		f	%	f	%
Duration of hypertension	< 5 years	20	66.67	17	56.67
	> 5 years	10	33.33	13	43.33
Family history of hypertension	Present	7	23.33	6	20
	Absent	23	76.67	24	80
Treatment of hypertension	Regular	29	96.67	30	100
	Irregular	1	3.33	0	0
Associated illness	Respiratory illness	4	13.33	5	16.67
	Cardiac illness	9	30	8	26.67
	Diabetes mellitus	18	60	13	43.3
	Others	8	26.67	8	26.67
Duration of medications	< 5 years	20	66.67	17	56.67
	> 5 years	10	33.33	13	43.33

The above table reveals that in experimental group, more than half of the samples 20 (66.67%) had hypertension for a period of less than 5 years and 10 (33.33%) samples had hypertension for a period between 5 and 10 years. In control group, more than half of the samples 17 (56.67%) had hypertension for

a period of less than 5 years and 13 (43.33%) samples had hypertension for a period between 5 and 10 years.

The above table displays that in experimental group, most of the samples 23 (76.67%) had no family history of hypertension and 7(23.33%) samples had family history of hypertension. In control group, most of the samples 24 (80%) had no family history of hypertension and 6 (20%) samples had family history of hypertension.

The above table displays that in experimental group, nearly all samples 29 (96.67%) took regular medication and 1(3.33%) sample did not take regular medication. In control group, all the samples 30(100%) took regular medication.

The above table displays that in experimental group, 18 (60%) samples suffered from diabetes, 9 (30%) samples suffered from heart diseases, 8(26.67%) samples suffered from other diseases and 4 (13.33%) samples suffered from lung diseases. In control group, 13 (43.33%) samples suffered from diabetes, 8(26.67%) samples suffered from heart diseases, 8(26.67%) samples suffered from other diseases and 5 (16.67%) samples suffered from lung diseases.

The above table displays that in experimental group, 20 (66.67%) samples took medication for less than five years and 10 (33.33%) samples took medication between 5 and 10 years. In control group, 17(56.67%) samples took medication for less than five years and 13 (43.33%) samples took medication between 5 and 10 years.

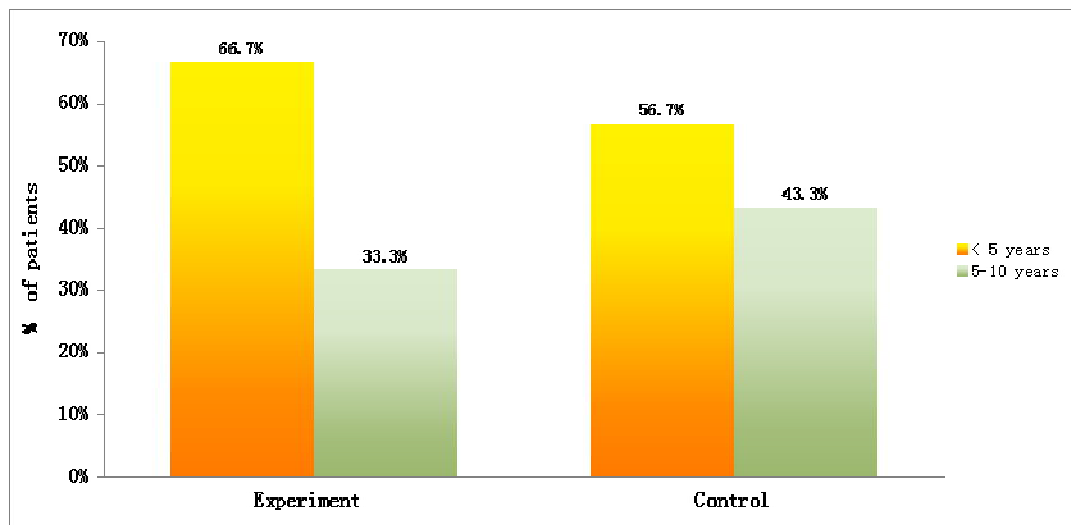


Fig. 12 Multiple bar diagram shows percentage distribution of patients with hypertension according to their duration of hypertension.

In experimental group, more than half of the samples 20 (66.67%) had hypertension for a period of less than 5 years and 10 (33.33%) samples had hypertension for a period between 5 and 10 years. In control group, more than half of the samples 17 (56.67%) had hypertension for a period of less than 5 years and 13 (43.33%) samples had hypertension for a period between 5 and 10 years.

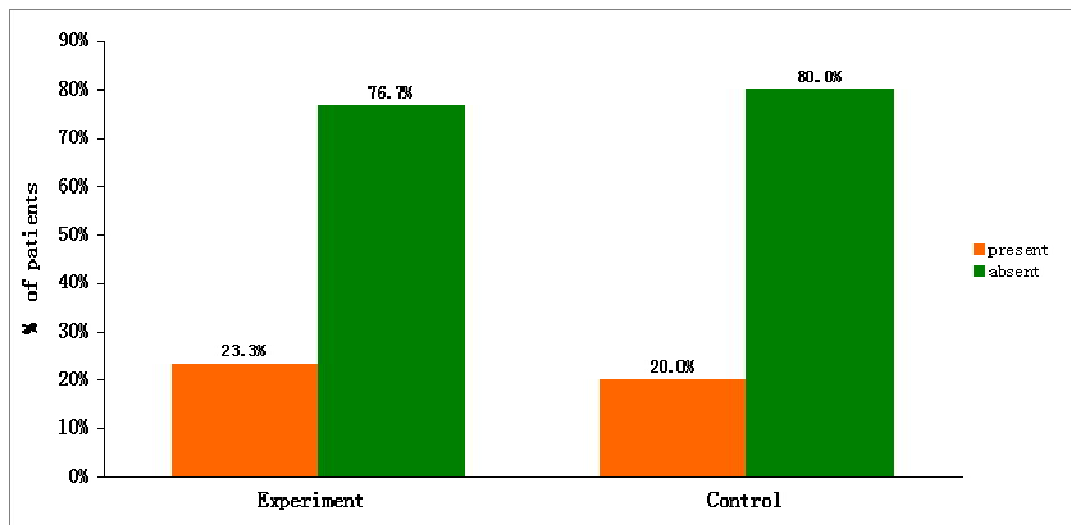


Fig. 13 Multiple bar diagram shows percentage distribution of patients with hypertension according to their family history of hypertension.

In experimental group, most of the samples 23 (76.67%) had no family history of hypertension and 7(23.33%) samples had family history of hypertension. In control group, most of the samples 24 (80%) had no family history of hypertension and 6 (20%) samples had family history of hypertension.

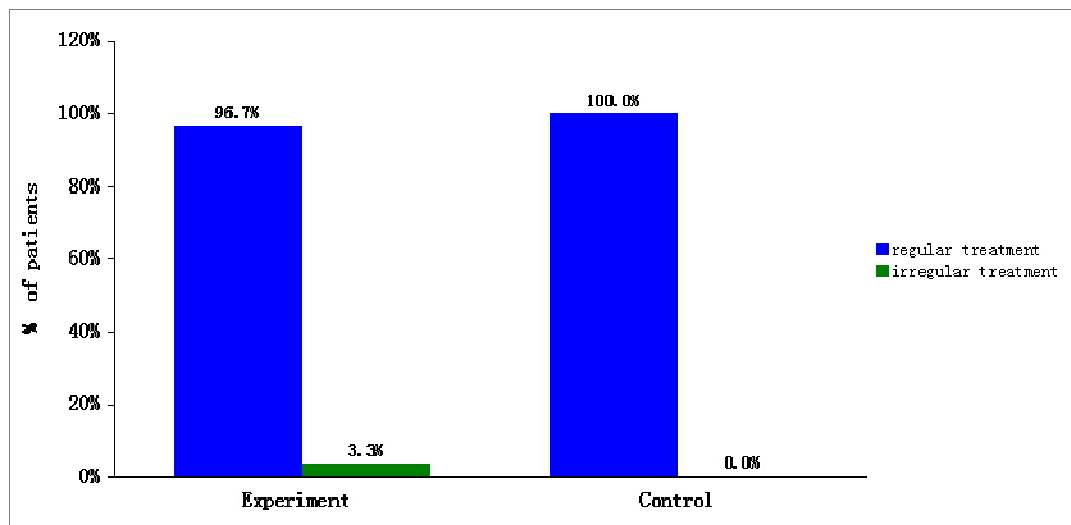


Fig. 14 Multiple bar diagram shows percentage distribution of patients with hypertension according to their treatment of hypertension.

In experimental group, nearly all samples 29 (96.67%) took regular medication and 1(3.33%) sample did not take regular medication. In control group, all the samples 30(100%) took regular medication.

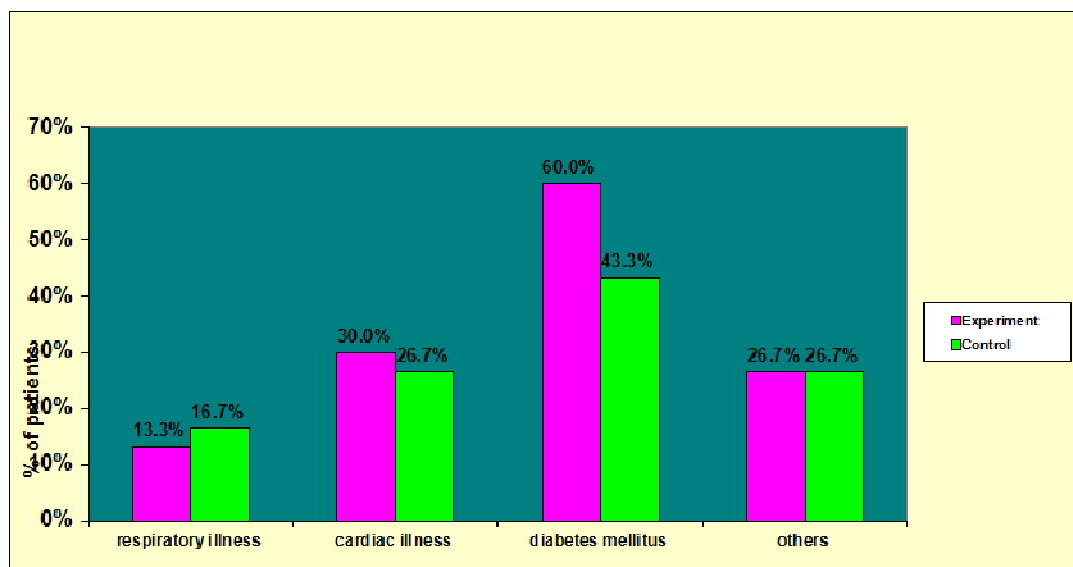


Fig. 15 Multiple bar diagram shows percentage distribution of patients with hypertension according to their associated illness.

In experimental group, 18 (60%) samples suffered from diabetes, 9 (30%) samples suffered from heart diseases, 8(26.67%) samples suffered from other diseases and 4 (13.33%) samples suffered from lung diseases. In control group, 13 (43.33%) samples suffered from diabetes, 8(26.67%) samples suffered from heart diseases, 8(26.67%) samples suffered from other diseases and 5 (16.67%) samples suffered from lung diseases.

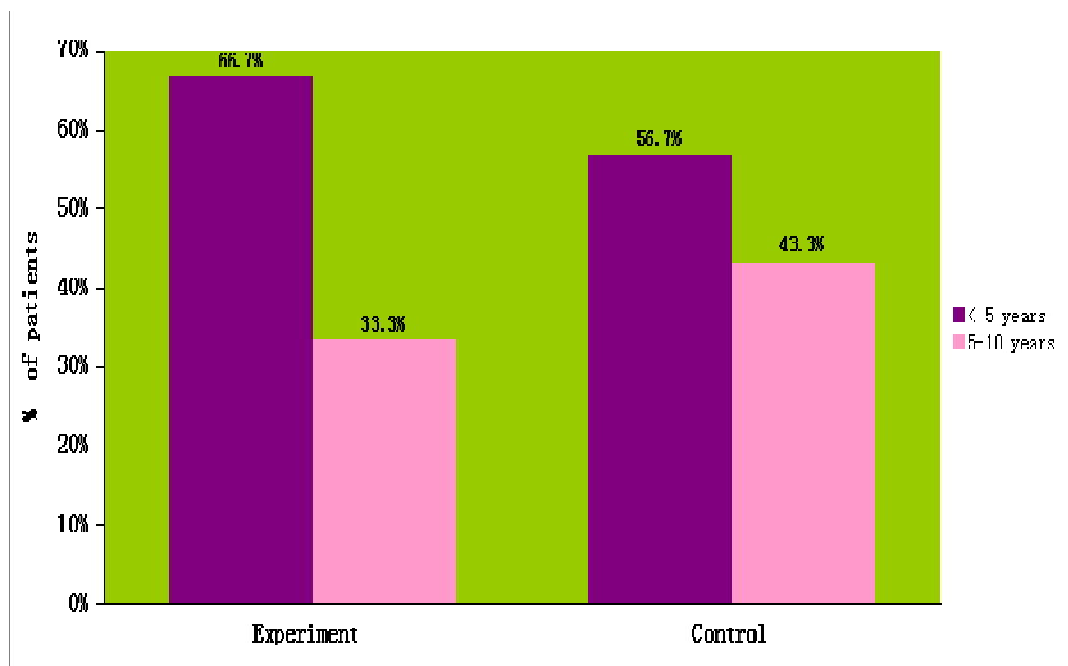


Fig. 16 Multiple bar diagram shows percentage distribution of patients with hypertension according to their duration of medication.

In experimental group, 20 (66.67%) samples took medication for less than five years and 10 (33.33%) samples took medication between 5 and 10 years. In control group, 17(56.67%) samples took medication for less than five years and 13 (43.33%) samples took medication between 5 and 10 years.

SECTION - II

The description of level of blood pressure among patients with hypertension Table-3: Mean and SD in pretest and posttest level of blood pressure among experimental and control group.

Group			Pre test		Post test		Mean difference
			Mean	SD	Mean	SD	
Blood pressure Level	Experimental group	SBP	139.4	5.89	134.73	3.33	4.67
		DBP	90.4	1.2	81.33	2.60	9.07
	Control group	SBP	137.8	4.94	138.47	4.49	0.45
		DBP	90.2	0.6	91.07	0.99	0.39

The above table shows the comparison of mean and standard

deviation of pre and post test scores among experimental and control group. In Pre-test the mean and the standard deviation of systolic blood pressure was 139.4 ± 5.89 in the experimental group and 137.8 ± 4.94 in the control group respectively.

In Pre-test the mean and the standard deviation of diastolic blood pressure was 90.4 ± 1.2 in the experimental group and 90.2 ± 0.6 in the control group respectively.

In Post-test the mean and the standard deviation of systolic blood pressure was 134.73 ± 3.33 in the experimental group and 138.47 ± 4.49 in the control group respectively.

In Post-test the mean and the standard deviation of diastolic blood pressure was 81.33 ± 2.60 in the experimental group and 91.07 ± 0.99 in the control group respectively. The mean difference of systolic blood pressure is 4.67 and 0.45 and that of diastolic blood pressure is 9.07 and 0.39 in experimental and control group respectively.

SECTION - III

Effectiveness of Foot Reflexology on pretest and post test blood pressure level score among patients with hypertension.

Table 4: Comparison of pretest and posttest level of blood pressure in experimental group

n=30

Experimental group		Mean	SD	Students Paired ‘t’ test	df
SBP	Pre test	139.4	5.89	**5.89	29
	Post test	134.73	3.33		
DBP	Pre test	90.4	1.2	**20.79	
	Post test	81.33	2.60		

Table value = 2.46

****Highly Significant at $p \leq 0.01$**

The above table 4 portrays the paired 't' test value which was calculated to analyse the effectiveness of foot reflexology on blood pressure level among experimental group. The calculated 't' value 5.89 was greater than the table value $t = 2.46$ at $p \leq 0.01$. It shows that foot reflexology was effective on reducing the high blood pressure among the patients with hypertension. Hence, the hypothesis H_1 is retained.

Section - IV

Comparison of post test mean blood pressure level score among patients with hypertension in experimental and control group.

Table 5 : Comparison of pretest and posttest mean blood pressure score

n=60

Blood Pressure	Group	Mean	SD	Independent 't' test	df
SBP	Experimental Group	134.73	3.33	3.6	58
	Control Group	138.47	4.49		
DBP	Experimental Group	81.33	2.60	18.85	
	Control Group	91.07	0.99		

Table value =2.39

****Highly Significant $p \leq 0.01$**

The above table 5 depicts the unpaired 't' test value 3.6 for systolic blood pressure was greater than the table value 2.39 at $p \leq 0.01$. The calculated 't' value 18.85 for diastolic blood pressure was greater than the table value 2.39 at $p \leq 0.01$. It shows that foot reflexology was effective in controlling the blood pressure among the patients with hypertension. Hence, the hypothesis H_2 is retained.

Section - V

Association between the level of blood pressure among patients with hypertension with their selected socio demographic variables and clinical variables.

Table 6: Association between level of blood pressure reduction score and patients demographic variables (experiment)

Demographic variables		Level of Fatigue reduction score				Total	χ^2 value	P- Value
		Sytolic blood pressure		Diastolic blood pressure				
		f	%	f	%			
Age	31 - 40 yrs	7	77.8	2	22.2	9	9.37 df=3	p=0.05* significant
	41 - 50 yrs	6	66.7	3	33.3	9		
	51 - 60 yrs	2	20.0	8	80.0	10		
	61 - 70 yrs	0	0.0	2	100.0	2		
Sex	Male	10	55.6	8	44.4	18	0.55	p=0.45
	Female	5	41.7	7	58.3	12	df=1	not significant
Educational status	No formal education	9	81.8	2	18.2	11	10.37 df=3	p=0.01** significant
	Up to middle school level	4	57.1	3	42.9	7		
	Higher secondary level	2	22.2	7	77.8	9		

	Diploma/Degree	0	0.0	3	100.0	3		
Occupational status	Unemployed	3	100.0	0	0.0	3	4.06	p=0.25
	Govt employee	4	44.4	5	55.6	9	df=3	not significant
	Private	6	40.0	9	60.0	15		
	Self employee	2	66.7	1	33.3	3		
Family income	Rs. < 5000	5	50.0	5	50.0	10	3.81	p=0.28
	Rs. 5001 -7,500	3	100.0	0	0.0	3	df=3	not significant
	Rs.7.501-10,000	3	50.0	3	50.0	6		
	Rs. > 10000	4	36.4	7	63.6	11		
Marital status	Married	10	41.7	14	58.3	24	366	p=0.16
	Unmarried	3	75.0	1	25.0	4	df=2	not significant
	Spouse not alive	2	100.0	0	0.0	2		
Type of family	Nuclear family	8	36.4	14	63.6	22	6.43	p=0.09
	Joint family	4	80.0	1	20.0	5	df=3	not significant
	Extended family	1	100.0	0	0.0	1		
	Separated family	2	100.0	0	0.0	2		
Food habit	Vegetarian	4	57.1	3	42.9%	7	0.18	p=0.69
	Non vegetarian	11	47.8	12	52.2	23	df=1	not significant
Locality	Rural	10	45.5	12	54.5	22	0.68	p=0.40

	Urban	5	62.5	3	37.5	8	df=1	not significant
Habits	Smoking	8	36.4	14	63.6	22	6.43	p=0.09
	Alcoholism	4	80.0	1	20.0	5	df=3	not significant
	Tobacco	2	100.0	0	0.0	2		
	others	1	100.0	0	0.0	1		
Duration of hypertension	< 5 years	.10	55.6	8	44.4	18	0.55	p=0.45 not
	5-10 years	5	41.7	7	58.3	12	df=1	significant
Family history of hypertension	Present	10	45.5	12	54.5	22	0.68	p=0.40
	Absent	5	62.5	3	37.5	8	df=1	not significant
Treatment of hypertension	Regular	4	52.2	3	46.9	7	11.23 df=2	P=0.01** significant
	Irregular	11	47.8	12	53.2	23		
Associated illness	Respiratory	9	81.8	2	18.2	11	0.55	p=0.45 not significant
	Cardiac	4	57.1	3	42.9	7	df=1	
	Diabetes	2	22.2	7	77.8	9		
	Others	0	0.0	3	100	3		
Duration of medication	< 5 years	.10	55.6	8	44.4	18	10.37 df=3	P=0.01** significant
	5-10 years	5	41.7	7	58.3	12		

The above table shows the association between level of blood pressure reduction score and patients demographic variables. Elders, more educated and the person who is in regular treatment and with regular medications are reduced more blood pressure than other after having foot reflexology. Statistical significance was calculated using chi square test.

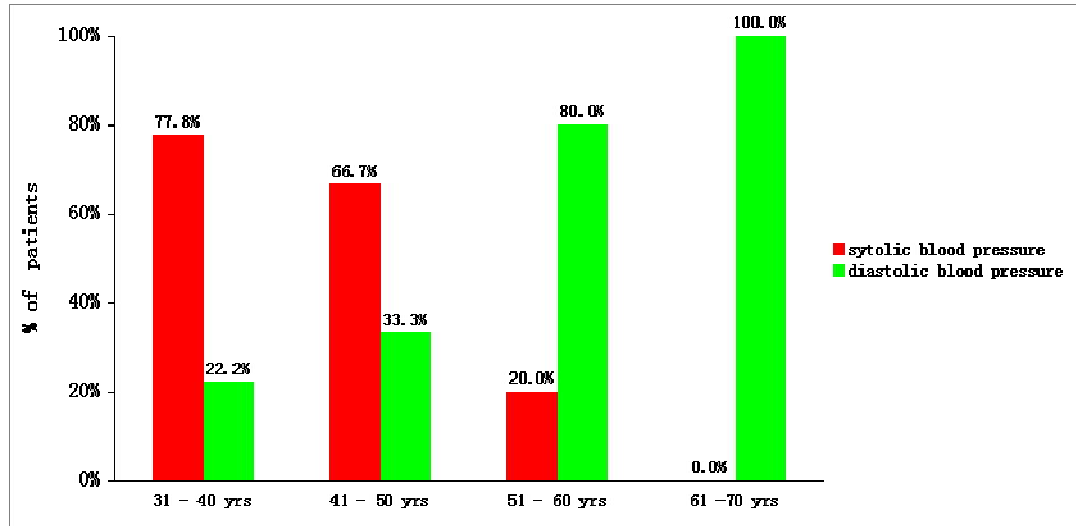


Fig.17 The above multiple bar diagram shows the association between level of blood pressure score reduction and patients age

The above diagram shows the association between level of blood pressure score reduction and patients age who were from 61-70 years of age. The statistical significance was calculated using chi square test.

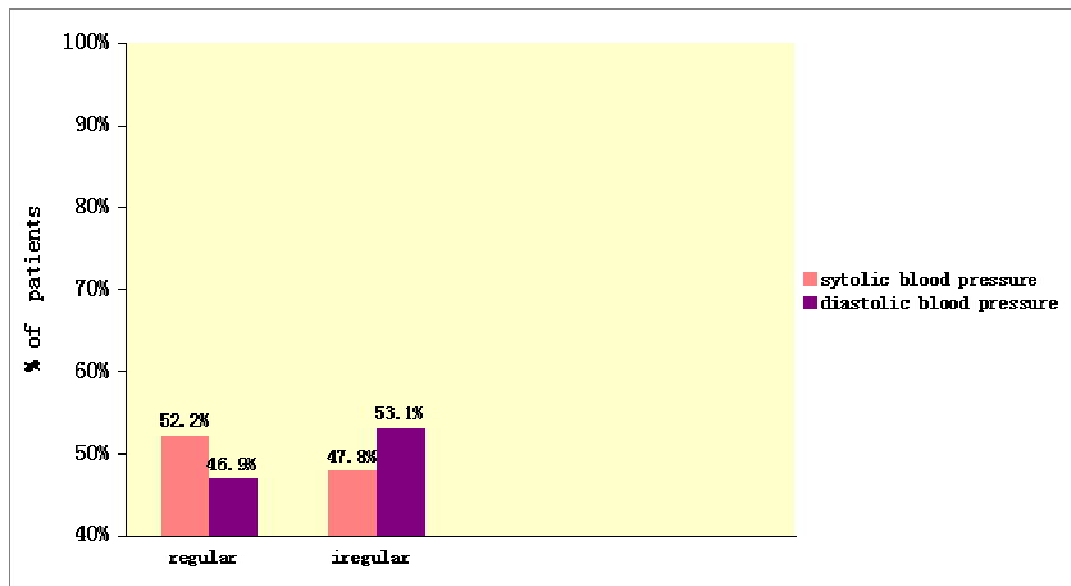


Fig.18 The above multiple bar diagram shows the association between level of blood pressure score reduction and patient's treatment for hypertension

The above diagram shows the association between level of blood pressure score reduction and patients treatment who were taking regular treatment. The statistical significance was calculated using chi square test.

CHAPTER - V

DISCUSSION

This chapter deals with the discussion of the study with appropriate literature review, statistical analysis and findings of the study based on objectives of the study.

The aim of the study to was to evaluate the effectiveness of foot Reflexology on Blood pressure scores among patients with hypertension at selected hospital, Erode. A Quasi experimental 2 group equivalent pretest, post-test design was used to assess the effectiveness of foot reflexology on Blood pressure scores among patients with hypertension.

Total 60 hypertensive patients were selected from the ward. The samples were selected by probability simple random sampling by lottery method. A pre-test was conducted by checking the systolic and diastolic blood pressure of the patients with hypertension

Discussion of socio demographic variables

In experimental group about 6.7%(2) of them falls within the age group of 31-40, about 30%(9) of them falls between the age group of 41 –50 , about 33.3%(10) of them falls between the age group of 51-60 and 30%(9) of them falls between the age group of 61 - 70. In control group, about 23.3%(7) of them falls between the age group of 31-40 years, 40% (12) of them falls between the age group of 41 –50 years, 26.7%(8) of them falls between the age group of 51-60 years and 10%(3) of them falls between 61- 70.

Similarly, with regard to gender in experimental group about 60%(18) of them are male while 40%(12) of them are female. In control group about 56.7%(17) of them are male while 43.3%(13) of them are female.

With regard to educational status about 36.7%(11) of them are not having formal education, 23.3%(7) of them are having up to middle school level education, 30.3%(9) of them are having higher secondary level education, 10%(3) of them are having diploma/degree level education in experimental group. While in control group, about 40%(12) of them are not having formal education, 30%(9) of them are having up to middle school level education, 23.3%(7) of them are having higher secondary level education, 6.7%(2) of them are having diploma/degree level education.

The table shows that the occupational status in experimental group about 10%(3) are unemployed, 30%(9), are government employee, 50%(15) are private and 10%(3) are self employee. In control group the occupational status about 26.7%(8) are unemployed, 30%(9), are government employee, 33.3%(10) are private and 10%(3) are self employee.

The table also shows that the family income in experimental group about 33.3%(10) are falling under the income of below 5000, about 10%(3) of them are falling between the income of 5001-7,500, 20%(6) between the income of 7,501-10,000 and about 36.7%(11) between the income of above 10,000. In control group, about 20%(6) of them falls below the income of 5000, about 23.3%(7) of them falls between the income of 5,001-7,500, about 20%(6) of them falls between 7,501-10,000 and Only 36.7%(11) of them all above the income of 10,000.

This distribution of marital status in experimental group consists of about 80%(24) are married, 13.4%(4) are unmarried, 6.7%(2) are spouse not alive and nobody got divorce. In control group about 80%(24) are married, 13.4%(4) are unmarried, 3.3%(1) are spouse not alive and 3.3%(1) got divorce.

In experimental group, about 73.3%(22) of them belong to nuclear family, 16.7%(5) of them belong to joint family, 3.3%(1) belongs to extended family and 6.7%(2) belongs to separated family. In control group, about 63.4%(19) of them belong to nuclear family, 23.3%(7) of them belong to joint family, 13.3%(4) belongs to extended family and none of them belongs to separated family.

In experimental group about 23.3%(7) of them are vegetarian and about 76.7%(24) of them belong to non-vegetarian. In control group about 20%(6) of them are vegetarian and about 33.3%(10) of them belong to non-vegetarian.

In experimental group about 73.3%(22) of them are in rural and about 26.7%(8) of them belong to urban. In control group about 66.7%(20) of them are rural and about 33.3%(10) of them are belong to urban area.

In experimental group about 33.3%(10) of them have the habit of smoking, 36.7%(11) of them were alcoholic and 30.0%(9) of them have the habit of tobacco chewing. In control group about 36.7%(11) of them have the habit of smoking, 30.0%(9) of them were alcoholic and 23.3%(7) of them have the habit of tobacco chewing and 10.0%(3) of them have the habit of others.

Discussion of clinical variables

In experimental group, more than half of the samples 20 (66.67%) had hypertension for a period of less than 5 years and 10 (33.33%) samples had hypertension for a period between 5 and 10 years. In control group, more than half of the samples 17 (56.67%) had hypertension for a period of less than 5 years and 13 (43.33%) samples had hypertension for a period between 5 and 10 years.

In experimental group, most of the samples 23 (76.67%) had no family history of hypertension and 7(23.33%) samples had family history of hypertension. In control group, most of the samples 24 (80%) had no family history of hypertension and 6 (20%) samples had family history of hypertension.

In experimental group, nearly all samples 29 (96.67%) took regular medication and 1(3.33%) sample did not take regular medication. In control group, all the samples 30(100%) took regular medication.

In experimental group, 18 (60%) samples suffered from diabetes, 9 (30%) samples suffered from heart diseases, 8(26.67%) samples suffered from other diseases and 4 (13.33%) samples suffered from lung diseases. In control group, 13 (43.33%) samples suffered from diabetes, 8(26.67%) samples suffered

from heart diseases, 8(26.67%) samples suffered from other diseases and 5 (16.67%) samples suffered from lung diseases.

In experimental group, 20 (66.67%) samples took medication for less than five years and 10 (33.33%) samples took medication between 5 and 10 years. In control group, 17(56.67%) samples took medication for less than five years and 13 (43.33%) samples took medication between 5 and 10 years.

Findings based on the objectives

- **The first objective is to assess the blood pressure among patients with hypertension admitted at selected Hospitals, Erode.**

In pre-test the mean systolic blood pressure was 139.4 ± 5.89 in the experimental group and 137.8 ± 4.94 in the control group. In pre-test the mean diastolic blood pressure was 90.4 ± 1.2 in the experimental group and 90.2 ± 0.6 in the control group. In post-test the mean systolic blood pressure was 134.73 ± 3.33 in the experimental group and 138.47 ± 4.49 in the control group. In post-test the mean and the standard deviation of diastolic blood pressure was 81.33 ± 2.60 in the experimental group and 91.07 ± 0.99 in the control group. The mean difference of systolic blood pressure was 4.67 and that of diastolic blood pressure was 9.07 in experimental group. The mean difference of systolic blood pressure was 0.45 and that of diastolic blood pressure was 0.39 in control group.

The present study is consistent with the study of **Kokiwar Prashant (2011)** conducted a community based cross sectional survey to study the prevalence of hypertension and to study the association between various factors and hypertension in a rural community of Central India. 924 study subjects aged 30 years and above were selected using random sampling. Anthropometry, blood glucose, and blood pressure were measured with standard instruments. Statistical tests were used to analyze the data wherever applicable. The result showed that the prevalence of hypertension was 19.04%. It was higher in females (23.4%) than males (14.4%). It was seen that prevalence of hypertension increased with age. Prevalence of Pre hypertension was high (18.8%). 4.3% had isolated systolic hypertension and 0.9% had isolated diastolic hypertension. Older age, increased body mass index and waist hip ratio were

significantly higher among hypertensive compared to normotensive. Factors like upper social class, sedentary physical activity, tobacco use and diabetes were significantly associated with hypertension. It was concluded that the prevalence of hypertension was high and was associated with socio-demographic factors. Hence there was need for primordial prevention efforts on large scale.

➤ **The second objective to evaluate the effectiveness of foot reflexology on blood pressure among patients with hypertension admitted at selected Hospitals, Erode**

Among the experimental group, in pre-test, the mean systolic blood pressure was 139.4 ± 5.89 and that of diastolic blood pressure was 90.4 ± 1.2 . In post-test, the mean of systolic blood pressure was 134.73 ± 3.33 and that of diastolic blood pressure was 81.33 ± 2.60 . The test of significance was calculated using paired 't' test. The calculated 't' value for systolic blood pressure was 5.89 and that of diastolic blood pressure was 20.79 were greater than the table value ($t = 2.46$) at $p \leq 0.01$. It showed that foot reflexology was effective in reducing the high blood pressure among the patients with hypertension. Hence hypothesis - H_1 : The post test blood pressure will be significantly reduced than the pre-test level in experimental group among patients with hypertension admitted at selected Hospital.

The mean post-test value of systolic blood pressure was 134.73 ± 3.33 and 138.47 ± 4.49 in the experimental and control group respectively. The mean post-test value of diastolic blood pressure was 81.33 ± 2.60 and 91.07 ± 0.99 in the experimental and control group respectively. The calculated unpaired 't' values for systolic blood pressure and diastolic blood pressure in experimental and control group were 3.6 and 18.85 respectively. These values were greater than the table value 2.39 at $p \leq 0.01$. It showed that foot reflexology was effective in controlling the blood pressure among the patients with hypertension. Hence the hypothesis - H_2 : The post test blood pressure will be significantly reduced in experimental group than the post test blood pressure in control group is accepted.

The present study is consistent with the study of Hughes CM, Krirsnakriengkrai S, Kumar S, McDonough SM, (2011) conducted a randomized controlled trial to study the effect of reflexology on heart rate and blood pressure in United Kingdom. Twenty-six healthy volunteers were grouped into

experimental and control group. Participants in the reflexology group received 20 minutes of reflexology, and the control group received 20 minutes of relaxation with a therapist holding each participant's feet. The outcome measures, HR and BP, were measured throughout. There were significant reductions in systolic blood pressure (SBP) (22%; $P = .03$) and in diastolic blood pressure (DBP) (26%; $P = .01$) during mental stress following reflexology compared to the stress period prior to intervention. In contrast, there was a 10% reduction in SBP ($P = .03$) but a 5% increase in DBP ($P = .67$) during the period of mental stress following the control intervention compared to results obtained during mental stress prior to this intervention. This study has demonstrated the feasibility of conducting an experimental study on the effect of reflexology in stress using BP as the primary outcome measure.

➤ **The third objective is to associate the blood pressure among patients with hypertension with their selected socio demographic and clinical variables admitted at selected Hospitals, Erode.**

In this study, only the age, educational status, treatment of hypertension and duration of medications are associated with the post test blood pressure in experimental study. Similarly, in control group none of the variable are associated with the post test blood pressure.

The present study is consistent with the study of **Dr. Shweta Choudhary PhD. (2006)**. conducted a true experimental study in All-India Institute of Medical Science, New Delhi, India on hypertension in reducing, blood pressure, fatigue and anxiety by selecting sixty patients of hypertension who were randomly assigned to a reflexology group and control group. Intervention involved the administration of standard drugs to both experimental and control groups. In addition, the experimental group received Fifteen to twenty minutes of foot reflexology. This study show a decrease of the quantity of pain killers in Group I (foot reflexology) to less than 50% in comparison with Group II (control). Hence H_3 : There will be a significant association between post test blood pressure with their selected socio demographic and clinical variables admitted in at selected Hospital, Erode.. Hence this hypothesis is accepted.

CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter represents summary, findings, and conclusion. It also clarifies the limitations of the study, the implications for different areas like nursing education, administration, nursing practice, nursing research and recommendations which create a base for evidence based practice.

6.1 Summary

The study was conducted in selected Hospitals, Erode. The populations of the study were selected from Bewell hospital And Erode Emergency Care Hospital Erode. Simple random sampling technique was used to select the patient. There were 60 patients selected for the study with the predetermined criteria for inclusion. The present study was aimed at evaluating the effectiveness of foot reflexology on blood pressure among patients with hypertension.

Objectives of the study were

- To assess the blood pressure among patients with hypertension admitted at selected Hospitals, Erode.
- To evaluate the effectiveness of foot reflexology on blood pressure among patients with hypertension admitted at selected Hospitals, Erode.
- To associate the blood pressure among patients with hypertension with their selected socio demographic and clinical variables admitted at selected Hospital, Erode.

The following hypotheses were tested at 0.001 level

H_1 : There is a significant difference between the mean pre-test and post test blood pressure in experimental group among patients with hypertension admitted at selected hospitals,Erode.

H_2 : There is a significant difference between post test blood pressure in experimental and control group patients with hypertension admitted at selected Hospitals, Erode .

H_3 : There is a significant association between blood pressure among patients with hypertension with their selected socio demographic and clinical variables admitted at selected Hospitals,Erode.

The assumption of the study were

Assumption

- Therapeutic application of foot reflexology may decrease elevated blood pressure in patients with hypertension.
- Hypertension may interferes with the activity of daily living.

The conceptual framework for this study was based on Wiedenbach's Helping Art of Clinical Nursing Theory. This theory directs action towards the explicit goal, and the goal here is reduced the blood pressure among patients with hypertension.A true experimental study was used in the study. The independent variable was foot reflexology and dependent variable was blood pressure. This study was conducted at Bewell Hospital And Erode Emergency Care Hospital, Erode. The accessible hypertensive patients admitted in nephrology ward at Bewell Hospital, Erode.

The study subjects were selected using the simple random sampling technique and were assigned to experiment group and control group (30 in each group). The data collection tools used were

1. Socio demographic variable,
2. Clinical Variable
3. Standardized Blood pressure chart

The content validity of the tool was established with the help of 5 experts. Pilot study was conducted on 10 subjects to find out the feasibility of the study and it did not show any major flaw in the design of the

study. After pilot study, reliability of the tool of the blood pressure rating scale was assessed by using split half method. Correlation coefficients are 0.81 and 0.85. These coefficients are very high and it is good tool for assessing the effectiveness of foot Reflexology among hypertensive patient.

The main study was conducted and the data obtained were analyzed using both descriptive and inferential statistics.

The findings of the study showed that there was a very high significant difference between the post test score of blood pressure in foot reflexology treated group and non treated group. The significant difference of blood pressure level between the experimental and control group. ($t = 4.34$, $P < 0.001$ which is very high).

6.2 Major findings of the study

This study attempted to find out the impact of foot reflexology on blood pressure among patient with hypertension.

In experimental group about 6.7%(2) of them falls within the age group of 31-40, about 30%(9) of them falls between the age group of 41 –50 , about 33.3%(10) of them falls between the age group of 51-60 and 30%(9) of them falls between the age group of 61 - 70. In control group, about 23.3%(7) of them falls between the age group of 31-40 years, 40% (12) of them falls between the age group of 41 –50 years, 26.7%(8) of them falls between the age group of 51-60 years and 10%(3) of them falls between 61- 70.

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The table also shows that the family income in experimental group about 33.3%(10) are falling under the income of below Rs. 5000, about 10%(3) of them are falling between the income of Rs.5001-7,500, 20%(6) between the income of Rs.7,501-10,000 and about 36.7%(11) between the income of above Rs.10,000. In control group, about 20%(6) of them falls below the income of 5000, about 23.3%(7) of them falls between the income of Rs.5,001-7,500, about 20%(6) of them falls between Rs.7,501-10,000 and Only 36.7%(11) of them all above the income of Rs. 10,000.

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In pre-test the mean systolic blood pressure was 139.4 ± 5.89 in the experimental group and 137.8 ± 4.94 in the control group. In pre-test the mean diastolic blood pressure was 90.4 ± 1.2 in the experimental group and 90.2 ± 0.6 in the control group. In post-test the mean systolic blood pressure was 134.73 ± 3.33 in the experimental group and 138.47 ± 4.49 in the control group. In post-test the mean and the standard deviation of diastolic blood pressure was 81.33 ± 2.60 in the experimental group and 91.07 ± 0.99 in the control group. The mean difference of systolic blood pressure was 4.67 and that of diastolic blood pressure was 9.07 in experimental group. The mean difference of systolic blood pressure was 0.45 and that of diastolic blood pressure was 0.39 in control group.

Among the experimental group, in pre-test, the mean systolic blood pressure was 139.4 ± 5.89 and that of diastolic blood pressure was 90.4 ± 1.2 . In post-test, the mean of systolic blood pressure was 134.73 ± 3.33 and that of diastolic blood pressure was 81.33 ± 2.60 . The test of significance was calculated using paired 't' test. The calculated 't' value for systolic blood pressure was 5.89 and that of diastolic blood pressure was 20.79 were greater than the table value ($t = 2.46$) at $p \leq 0.01$. It showed that foot reflexology was effective in reducing the high blood pressure among the patients with hypertension.

The mean post-test value of systolic blood pressure was 134.73 ± 3.33 and 138.47 ± 4.49 in the experimental and control group respectively. The mean post-test value of diastolic blood pressure was 81.33 ± 2.60 and 91.07 ± 0.99 in the experimental and control group respectively. The calculated unpaired 't' values for systolic blood pressure and diastolic blood pressure in experimental and control group were 3.6 and 18.85 respectively. These values were greater than the table value 2.39 at $p \leq 0.01$. It showed that foot reflexology was effective in controlling the blood pressure among the patients with hypertension.

In this study , only the age, educational status, treatment of hypertension and duration of medications are associated with the post test blood pressure in experimental study . Similarly, in control group none of the variable are associated with the post test blood pressure.

6.3 Conclusion

The statistical evidence proved that the foot reflexology had reduced the blood pressure among patients with hypertension who were admitted selected hospital, Erode. when compared with the control group. Hence the researcher concluded that foot reflexology is effective intervention to reduce the blood pressure among patients with hypertension in other settings.

6.4 Nursing Implication

The Study findings shows the value of nurse's role in decreasing the blood pressure among patients with hypertension using a cost effective, harmless, non-invasive, non pharmacological treatment that is foot reflexology. It also signifies the significance of formulation of strategy and implementation of foot reflexology particularly at medical wards where literature shows lack of therapeutic environment. This study has brought out certain implications in the area of nursing practice, nursing education, nursing administration and in research also.

Implications in Nursing Practice

The above study has following implications on nursing practice

- Nurses play a vital role in prevention of non-communicable diseases (NCD). The incidence and prevalence of hypertension and its complications are increasing every year. Thus, there is an urgent need to concentrate on the measures to reduce the disease burden.
- Foot Reflexology can be incorporated in the daily nursing routine as it is a proven technique to reduce the elevated Blood Pressure.

- The nursing personnel should be responsible to create awareness in the general public through mass media campaign regarding the importance of foot reflexology as an adjuvant therapy for hypertension and prevent its complications.

Implications in Nursing Education:

The above study has following implications on nursing education

- As Nurse Educators, we must strengthen the non-pharmacological methods of managing hypertension and should be incorporated in nursing subjects.
- Nursing education should emphasize on preparing nurses to various treatment modalities and update their knowledge in all fields including complementary and alternative medicine.
- This study will enhance the nursing students to acquire knowledge about foot reflexology and its importance in maintaining the blood pressure.
- Student nurses can be trained in practicing foot reflexology so that they can inculcate it in nursing care activities.

Implications in Nursing Administration

The above study has following implications on nursing administration

- Nurse administrators should organize various staff development programs to educate the nurses on importance of foot reflexology as an adjunct to manage hypertension.
- Nurse administrators should motivate the nurses to gain knowledge regarding various alternative therapies for hypertension and implement them while caring the clients.

Implications in Nursing Research

The above study has following implications on nursing research

- This study can be a baseline for future studies to build upon and motivate the investigators to conduct further studies.

- There is a need for extensive research in hypertension and its non-pharmacological measures such as reiki, laughter therapy, yoga and other relaxation techniques.
- As Nursing profession focuses on evidence based practice, the nursing personnel should involve in research activities to come out with successful remedies to reduce the burden of various diseases.

6.5 Recommendations

The investigator recommends the following studies to strengthen the nursing care

- ❖ The study can be conducted with large samples to generalize the findings.
- ❖ Comparative studies can be conducted between various alternative modalities like comparison of foot reflexology with reiki.
- ❖ The study can be conducted in different clinical settings.
- ❖ Comparative study can be undertaken between the genders.
- ❖ The same study can be conducted in community settings where the family members can be taught about foot reflexology.
- ❖ Similar study can be conducted with longer duration of intervention.

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ANBU COLLEGE OF NURSING

(G.O. Ms.No.220, Health & Family Welfare (PME) Dept. / 13.06.2007)

MGR Nagar, Pallipalayam Road,
KOMARAPALAYAM - 638 183.
Namakkal Dt., Tamilnadu, India.



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Website : www.anbu.ac.in ; E-mail : info@anbu.ac.in

Prof. K. Vijayalakshmi, M.Sc.(N),
Principal.

To
The Chief Medical Officer,
Head – Emergency and Critical Care,
Be Well Hospital,
#5 & 7, Gandhiji Road,
Erode 638001.
Erode.

Respected Sir,


Sub: Letter seeking permission for conducting the study – Regarding.

Mr. R. Silambarasan, is a II Year M.Sc.(Nursing) student of our college is planning to conduct a study to “A study to evaluate the effectiveness of foot reflexology on blood pressure among patients with hypertension at selected hospital, Erode ”.

This study is undertaken as part of her research project to be submitted to The Tamil Nadu Dr. MGR Medical University at Chennai, in partial fulfillment of University requirement for the award of M.Sc.(Nursing) degree. I request you to kindly grant permission to conduct the study at your esteemed Hospital. I humbly request you to do the needful towards the same.

Thanking you,

Yours sincerely,


PRINCIPAL
ANBU COLLEGE OF NURSING
MGR NAGAR PALLIPALAYAM ROAD
KOMARAPALAYAM 638 183
NAMAKKAL DISTRICT


Dr. S. SENTHILKUMARAN,
MD, DIPA & E, FCCM, FAEM, PHD.
Chief of Medical Service,
Head Emergency & Critical Care,
Reg. 66817, BE WELL HOSPITAL,
No: 5 & 7, Gandhiji Road, ERODE - 1.

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Website : www.anbu.ac.in ; E-mail : info@anbu.ac.in

Prof. K. Vijayalakshmi, M.Sc.(N),
Principal.

To
The Managing Director,
Erode Emergency & Critical Care Hospital,
Veerappampalayam,
Thindal PO)
Erode.

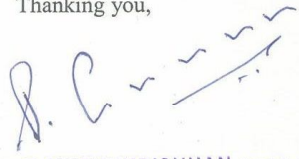
Respected Sir,

Sub: Letter seeking permission for conducting the study – Regarding.

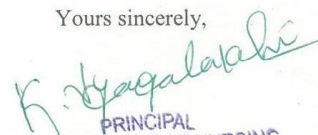
Mr. R. Silambarasan, is a **II Year M.Sc.(Nursing)** student of our college is planning to conduct a study to “**A study to evaluate the effectiveness of foot reflexology on blood pressure among patients with hypertension at selected hospital, Erode**”.

This study is undertaken as part of her research project to be submitted to The Tamil Nadu Dr. MGR Medical University at Chennai, in partial fulfillment of University requirement for the award of M.Sc.(Nursing) degree. I request you to kindly grant permission to conduct the study at your esteemed Hospital. I humbly request you to do the needful towards the same.

Thanking you,


Dr. P. MUTHUKRISHNAN, MBBS., DA.
Managing Director,
Erode Emergency Care Hospital,
Veerappampalayam Main Road,
Thindal (PO), ERODE - 12.

Yours sincerely,


K. Vijayalakshmi
PRINCIPAL
ANBU COLLEGE OF NURSING
MGR NAGAR PALLIPALAYAM ROAD
KOMARAPALAYAM 638 183
NAMAKKAL DISTRICT

ANNEXURE - IV

LIST OF EXPERTS WHO VALIDATED THE TOOL

1. Mrs.M.Latha, M.Sc (N).,MBA.,Ph.D.,
Principal,

Sakthi College of Nursing,

Karur,
2. Mrs.C.Gracy,M.Sc.(N).,
Reader,

Dhanvanthri College of Nursing,

Namakal,
3. Prof.Mrs.B.Angayarkanni, M.Sc(N).,
Nanda College of Nursing,

Erode,
4. Dr.S.Senthilkumaran, M.D, DIP A&E, FCCM,FAIEM,Ph.D.,
Chief of Medical Service, head emergency and critical care,

Bewell Hospital.

Erode.
5. Dr.P.. Muthu Krishnan. M.B.B.S.(DA).,
Managing Director,

Erode Emergency Care hospital.

Erode.

TOOL FOR DATA COLLECTION

Section A: Demographic variables of the samples.

Section B: Clinical details of the Patients with hypertension.

Section C: Blood pressure chart.

SECTION- A

DEMOGRAPHIC VARIABLES

1. Age: ()
 - a. 31-40 years
 - b. 41-50 years
 - c. 51-60 years
 - d. 61-70 years
2. Sex: ()
 - a. Male
 - b. Female
3. Education: ()
 - a. Illiterate
 - b. Primary Education
 - c. Secondary Education
 - d. Higher Secondary Education
 - e. Graduate
4. Occupation ()
 - a. Self employed
 - b. Govt. Job
 - c. Private Job
 - d. Retired
 - e. Unemployed

5. Income per month (in Rs): ()
- a. < Rs 5,000
 - b. Rs 5,001-7,500
 - c. Rs 7,501-10,000
 - d. > Rs 10,000
6. Marital status: ()
- a. Unmarried
 - b. Married
 - c. Widow/ widower
 - d. Divorcee
7. Type of family ()
- a. Nuclear family
 - b. Joint family.
8. Diet pattern: ()
- a. Vegetarian
 - b. Non vegetarian
9. Place of Living: ()
- a. Rural
 - b. Urban
10. Habits: ()
- a. Smoking
 - b. Alcohol
 - c. Chewing tobacco
 - d. Others

SECTION-B
CLINICAL DETAILS OF THE PATIENTS
WITH HYPERTENSION

1. Duration of hypertension: ()
 - a. < 5 years
 - b. 5-10 years

2. Family history of hypertension: ()
 - a. Present
 - b. Absent

3. Treatment for hypertension: ()
 - a. Regular treatment
 - b. Irregular treatment

4. Associated Illness: ()
 - a. Respiratory illness
 - b. Cardiac disease
 - c. Diabetes mellitus
 - d. Others

5. Duration of Medication: ()
 - a. < 5 years
 - b. 5-10 years

SECTION-C

BLOOD PRESSURE CHART

OBSERVATION	DAY 1		DAY 2		DAY 3		DAY 4		DAY 5	
DATE										
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
SYSTOLIC BLOOD PRESSURE (in mm Hg)										
DIASTOLIC BLOOD PRESSURE (in mm Hg)										

ბიბლიური ტერმინები

1. ასაკი

- m. 21 - 35წელი .
- M. 36- 50წელი .
- , . 51 - 65წელი .
- <. 65 წელი .

2. გვარდამკვეთი:

- m. მამაკაცი ; .
- M. ქალი ; .

3. წარმოშობის ქვეყანა

- m. გერმანიის მოქალაქე .
- M. ნიდერლანდის მოქალაქე .
- , . ნიდერლანდის მოქალაქე .
- <. გერმანიის მოქალაქე .

4. გვარდამკვეთის დანიშნულება

- m. ტერმინის დანიშნულება .
- M. რანგის დანიშნულება ; .
- , . ნიშნის დანიშნულება .
- <. მუდმივი გვარდამკვეთი .

5. ფაქტობრივი ტერმინები

- m. &.2000 - 3000 .
- M. &.3001 - 4000 .

, . &.4001 - 5000

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<. &.5001fFk; Nky;

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6. j pUkz epi y

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, . tpthfuj j hdt h

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7.குடும்பவகைகள்

அ..தனிக்குடும்பம்

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ஆகூட்டுக்குடும்பம்.

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இவிரிவானகுடும்பம்.

.

ஈ பிரிந்த குடும்பம்

8.உண்வு பழக்க வழக்கம்

அ .சைவம்

.

ஆஅசைவம்.

.

இ முட்டை.மட்டும் சாப்பிடுபவர்

.

9. இருப்பிடம்

அ கிராமம்

.

ஆ நகரம்

.

10. goff toffk;

- m) Gi fg; gof,fk; .
- M) kJg; gof,fk; .
- ,) Gi fapi y gof,fk; .
- <) , j u gof,fqfs .

gFj p M

kpi f , uj j mOj j k; gwwpa FwpgGfs;

1. kpi f , uj j mOj j k; c ss fhyk ()
 - m) 5 tUl j j wFk; Fi wthf
 - M) 5 Kj y; 10 tUl qfs;

2. FLkgj j py; vthfNFDk; kpi f , uj j mOj j k; c ssj h? ()

m) c z ;L

M) , yi y

3. kpi f , uj j mOj j wF nj hl hēJ kUeJ c l nfhsqtuh? ()

m) Mk;

M) , yi y

4. gw nj hl hG Neha;fs ()

m) Ei ualy; rkgej ggl i i t

M) , Uj ak; rkgej ggl i i t

,) ehpopT Neha;

<) gw

5. kpi f , uj j mOj j wF kUeJ c l nfhsS k; fhyk; ()

m) 5 tUl j j wFk; Fi wthf

M) 5 Kj y; 10 tUl qfs;

FOOT REFLEXOLOGY PROCEDURE

INTRODUCTION

"Disease is not an entity, but a fluctuating condition of the patient's body, a battle between the substance of disease and the natural self-healing tendency of the body.

-Hippocrates.

Reflexology was introduced to the United States in 1913 by William H. Fitzgerald, M.D. (1872–1942), an ear, nose, and throat specialist. Fitzgerald claimed that applying pressure had an anaesthetic effect on other areas of the body. Reflexology is a healing art of ancient origin. Although its origins are not well documented, there are reliefs on the walls of a Sixth Dynasty Egyptian tomb (c. 2450 B.C.) that depict two seated men receiving massage on their hands and feet. Also it is documented in the book *De Medicina* (On Medicine) by A. Cornelius Celsus and it was written as “one will read much more often, however, some other part is to be rubbed than that which is the seat of the pain; and especially when we want to withdraw material from the head or trunk, and therefore rub the arms and legs.”. Reflexology was modified in the 1930s and 1940s by Eunice D. Ingham (1889–1974), a nurse and physiotherapist. Ingham claimed that the feet and hands were especially sensitive, and mapped the entire body into "reflexes" on the feet renaming "zone therapy" to reflexology.

DEFINITION

Reflexology is performed by physically applying pressure to the feet, hands and ears (reflex areas), which is designed to increase the flow of vital energy to various parts of the body. It does not include the use of oils or lotion but it induces a positive outcome and physical change to the body

BENEFITS OF FOOT REFLEXOLOGY

In general, human problems are due to the ill health which creates stress and tension that can cause many complaints. In fact medical research shows that more than 75% of all health problems can be linked directly to stress.

The following benefits of foot reflexology are

- **Release stress and tension**

- **Improve blood circulation** and activates lymph drainage
- Assist in **elimination of toxins**
- **Strengthen** the **immune system** and harmonises vital functions
- Enable a **deep state of relaxation** and well being

Ease pregnancy, labor and delivery.

DIFFERENCE BETWEEN FOOT REFLEXOLOGY AND MASSAGE

Reflexology + foot massage = well being

Reflexology is an ancient therapy known to promote the body's own healing powers. It is suitable for any age groups, from babies to seniors. Reflexology is not dd the same as **a foot massage**; it's a **natural healing therapy** which is highly effective in dealing with many health complaints. A foot massage can

promote **relaxation** but does not have long term effects; however foot reflexology promotes equilibrium and well being with long lasting impact.

Reflexology therapy provides longer term wellness by removing the cause of the ailment and working in an holistic manner. Foot reflexology is based on the principle that the foot is like a chart of the body divided into **ten reflex zones**, it is a mirror image of the body. The reflexology chart depicts that each reflex zone corresponds to a part of the body. Specific manipulation and pressure of reflex points reduces and eliminates blockages in the corresponding glands or organs, and therefore restores a healthy balance.

FOOT REFLEXOLOGY PROCEDURE:

PREPARATION OF THE PATIENT:

1. Explained the procedure and got the consent form from the patients.
2. Informed the patient about the duration of the procedure which was 20 minutes.

3. Instructed the patient to wash the feet and clean with the dry towel.
4. Provided privacy to the patient and positioned the patient in a supine position.
5. Advice the patient to drink the water (500ml) unless contraindicated.

PROCEDURE:

- Explained the patients about the foot reflexology
- Wash the hands and warm up the fingers by rubbing together in order to improve the energy field of the researcher, thereby the better foot reflexology given to the patient.

REFLEXOLOGY TECHNIQUES

Reflexology is a complementary therapy that can be used in conjunction with medical treatment to provide relief from certain ailments. It is based on the belief that certain zones on your feet, hands, lower legs, face and ears correspond to different areas and organs throughout your body. According to the Association of Reflexologists, pressing on these reflexology points can stimulate the organs and help ease certain conditions by promoting circulation and muscle relaxation.

Reflexology is no substitute for medical advice or treatment, but a trained reflexologist manipulates the correct reflex points in order to help alleviate symptoms and assist with pain management. Most reflexology techniques are based on the idea of applying pressure to each reflexology point and you could feel pressure and possibly a tingling sensation, but if you feel pain you're pressing too hard and a qualified reflexologist is considered to be the best person to administer this therapy, you can also perform therapeutic techniques on yourself at home.

EFFLEURAGE

Effleurage involves gently stroking the target body part -- usually the feet or hands -- with fluttering movements. The practitioner may use oils to further aid relaxation, although they are not standard to

reflexology. They may also revert back to this technique throughout the session to relieve tension in the targeted reflexology zone and corresponding body part.

CREEPING

Creeping is also known as thumb walking – press down with the fat pad of your thumb and slowly move forward across your hand or foot. It is suggested to use the creeping technique to move up and down each toe on both feet to help relieve sinus-related congestion.

ROTATION

This technique is often used when manipulating the web between your thumb and first finger, which corresponds to your kidneys and adrenals glands. Use the technique halfway up your first and middle fingers to access your eye and ear reflexes, respectively. Press on the reflex point with the fleshy part of your thumb and firmly rotate the finger in towards your body. Apply pressure for a few seconds while in the rotated position then relax. Practitioners claim that reflexology can relieve tension, improve blood and lymph circulation, promote healing by activating the body's immune response, soothe inflammation, reduce stress and improve existing chronic ailments..

FINGER WALKING TECHNIQUE

Use the finger walking reflexology technique by locating the point on the foot which corresponds to the organ which has to be treated. Then apply pressure with your finger to that point while you bend and straighten your finger. Move your finger slightly with each movement so you gradually cover the designated point. Make very tiny movements so the entire point has pressure applied to it.

THUMB WALKING TECHNIQUE

The most common technique in foot reflexology is thumb walking. This is also known as caterpillar walking because the movement of your thumb resembles the movement of a caterpillar. First, locate the point on the foot to be treated. Place your thumb upon it and apply pressure. Move your thumb

like a caterpillar as you straighten and bend your thumb applying pressure the whole time. Move your thumb over the entire point area while making very tiny movements.

TOE ROTATION

Work all of the points on the toes by using the toe rotation technique. Use your fingers and thumb to grasp each individual toe on the foot one by one. While holding onto a toe gently and slowly rotate it in full circles three times in each direction.

SLIDE AND PRESS

Place both of your hands on the heel of the foot. Slide your thumbs along the bottom of the foot from the center to the outside, working up from the bottom of the foot to the toes. This technique works a large area of the bottom of the foot and helps to release tension.

HOOKING

Work on a small reflex point by using the hook technique. To do this, hold onto the foot with one hand. If you are right handed, use your left hand to hold the foot and your right hand to perform the hook. Place your thumb on the reflex point, press in sharply and quickly withdraw using a hooking motion. This is useful for applying pressure to tiny points and for working through thick skin.

REFLEXOLOGY TECHNIQUES

EFFLEURAGE

CREEPING OR THUMB WALKING



TOE ROTATION



ANKLE ROTATION



FINGER WALKING



HOOKING



REFLEXOLOGY TECHNIQUES



ANKLE FREEING



STRETCHING



WRINGLING



KNEADING



POINT PRESSURE



REMINDERS BEFORE USING REFLEXOLOGY

1. Avoid reflexology for one hour after meals.
2. Within 30 minutes after massage, you should drink 500 ml of warm water.
3. In case of kidney or heart disease, you should drink not more than 150 ml of water.
4. Do not apply pressure to bones.
5. Do not feel alarmed if an ailment seems to worsen or the mouth feels dry, after a session of reflexology .This is normal, especially in the case of inflammation or rheumatism and will pass shortly.

STEPS OF FOOT REFLEXOLOGY

Start the exercise with the left foot and then repeat on the right foot.

Step 1: Rest in a comfortable chair or in a comfortable position on the floor or exercise mat. Bring your foot up and rest it over the opposite knee. Lace your fingers with your toes and rotate your foot at the ankle in a clockwise motion for a ten second count. Rotate at the ankle in a counter-clockwise motion for the same count.

Step 2: Gently stretch your Achilles tendon by pulling your foot upwards and backwards. Keep your fingers interlaced with your toes as you do this. Move slowly and stop pulling if you feel pain. Hold for a count of five, and slowly release your foot.

Step 3: Place the ball of your foot, or your heel, between both your hands, grasping it from both sides. Move your foot backwards and forwards.

Step 4: Beginning at your toes, place one hand on top of your foot and the other beneath. Then, use your thumb on the underside of your foot to slowly caress and apply steady pressure to each of your toes, the line of your foot beneath your toes and the inner edge of your heel.

Step 5: Keeping your hands on top and bottom, knead your foot between your hands.

Step 6: Make a fist with the hand beneath your foot. Press the fist against your foot, lining your knuckles up with the base of your toes. Push your hands together, sandwiching your foot between them. Hold for a count of ten. Rotate your fist so that it rests on the inner curve, or arch, of your foot. Press, and hold for a count of ten. Repeat on the outer edge of your foot and then again on your heel, holding the back of your ankle from the top for pressure.

Step 7: Finish your session by massaging lotion onto your feet. The action will cause heat to warm and release any stress in your feet, and the massage will help you pinpoint areas that may have been missed.

Try experimenting with this exercise by using a golf ball instead of your hands. Even when you're at work, you can slip your shoes off and treat stress by performing the exercise with one of these tools.

EFFECTS OF FOOT REFLEXOLOGY IN PATIENTS

1. Tiredness, Nauseous, Cold like symptoms,
2. A need to urinate more than usual,
3. More emotional than usual,
4. More lethargic than usual.

5. Most people experience a sense of well being and relaxation, others find it uplifting and energising. For some, symptoms may worsen before they improve. This is called the 'healing crisis'. It indicates that the body is beginning to eliminate toxins and starting to heal itself.

6. Massage relaxes the mind and nervous system and stimulates the circulatory and lymphatic systems, improving the supply of nutrients to the body tissues and aiding in the removal of the toxins and waste products from them.

AFTER CARE ADVICE

In order to ensure the full benefits of a treatment clients are usually asked to carry out the following advice for 24 hours following treatment:

1. Drink lots of water as this will help hydrate the body, flush out toxins and improve energy levels.
2. Try to rest for the rest of the day as this will help the treatment work to it's full potential and will allow your body to focus on healing and avoid tea, coffee and alcohol as these are stimulants and will reduce the effectiveness of the treatment.

3. Eat a light and healthy diet to allow your body to put its energy into healing. Reposition the patient and provide the psychological support

TRAINING CERTIFICATE FOR FOOT REFLEXOLOGY



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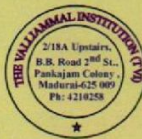
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